

MOBILE COMPUTING SOLUTION FOR HEALTHCARE INSTITUTIONS

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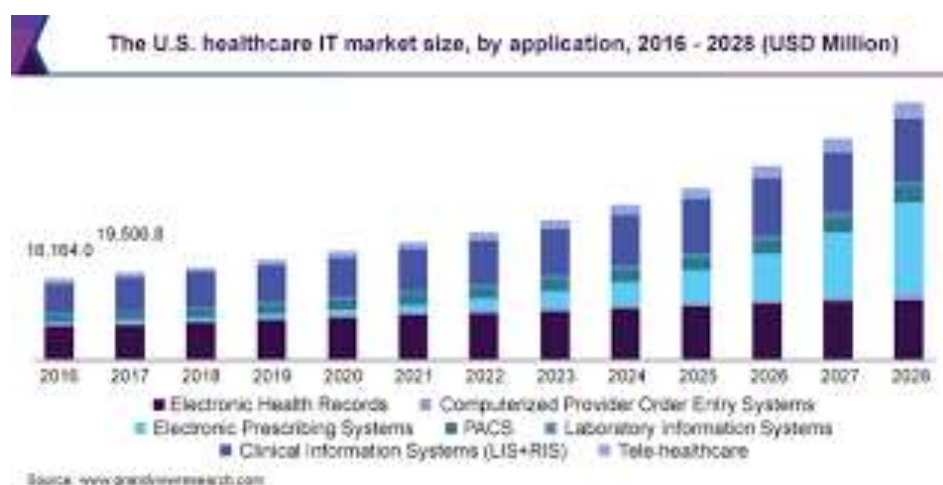
Abstract - In this paper we look at information technology (IT) trends in the healthcare sector. We analyse recent changes in IT implementations in the healthcare sector to identify critical factors and technologies that are likely to be an integral part of healthcare institutions in the new millennium. We highlight the case of US based HIS who face IT challenges in light of a marginal percentage decrease in financial resources for IT purposes. IoMT is also discussed in this paper. We identify the lack of an Integrated Healthcare Information System to be the most fundamental obstacle that is denying the productivity explosion needed in the healthcare sector. we look at some of the technologies that together could provide solutions. We use data from our collaborating organization to present a possible low cost IT solution.

Keywords - WorMow, OOT, Toolkit, IoMT

I. INTRODUCTION

The last two decades of the twentieth century has witnessed a shift in the concept of healthcare information. This shift has been marked by the coming of age of paradigms such as Bioinformatics, Biomedical and Genetic Engineering resulting in exponential advances in healthcare knowledge . One of the most significant implications of this paradigm shift has been the realization that individual healthcare stakeholders are not going to be in position to adapt to the above with ease. Some of the major technologies that have showed a lot of promise in this regard are Workflow Management Systems, Mobile Computing technologies such as Personal Digital Assistant (PDA), Wireless Local Area Network (WLAN) and Object Oriented Technology (OOT)

The Internet of Medicines Technology or IoMT has been referred to as "Smart Healthcare" as technology to build a digitised health-care system and to connect current data-relevant tools and health-care services. The IoT is an implemented for testing and tracking purposed to medical and health related purposes. The Internet of Medical Things (IoMT) is the use of IoT for medical and health-related purposes, for research and monitoring data collection and analysis. The IoMT has been described as "Smart Healthcare," as the infrastructure to build a digitized healthcare network, linking accessible patient information and healthcare facilities.



II. HEALTHCARE IT APPLICATIONS

Clinical information systems in conjunction with Mobile Computing are priority areas for HIS. Now a days IT applications in healthcare use OOT in conjunction with protocols centred around Mobile Computing and the Internet. WLAN- based mobile computing allow healthcare workers to interact in real-time with the hospital's host computer system to enter, update and access patient data and associated treatment from all clinical departments. The fact that a WLAN takes about one hour to be made operational has been trumpeted as one of the biggest advantages of a WLAN in comparison to a more traditional network, installation of which would take significantly longer. It has been found that the average pay-back period for the initial costs of WLAN installations is about 8.9 months. In a survey of WLAN healthcare installations, 97% of customers indicated that "WLANs met or exceeded their expectation to provide their company a competitive advantage"

The use of PDAs by physicians has witnessed rapid acceptance in recent times. Today about 40% of all physicians use PDAs. However, the majority of physicians are using PDAs to perform static functions. Most of them use PDAs to collect reference material with "the most popular method being ePocrates - a drug reference application physicians can look up drugs by name or diagnoses, cross-reference similar medications or generic alternatives, and receive alerts on interactions.

III. THE APPLIED NETWORK SOLUTIONS (ANS) TOOLKIT

The ANS toolkit is a comprehensive IHIS solution that has been customised for HIS. Currently it has been installed at over 24 National Health Service ("S) Trusts in UK. The ANS toolkit consists of four main modules:

1. ANS Admin offers users the ability to control access to database. It allows authorised administrators to ensure the integrity of the databases. It supports simultaneous management and control of information over several different vendor databases such as Microsoft SQL Server and Oracle SQL Base.
2. ANS Upload supports the rapid development of applications that allow users to automate electronic feeds between different databases. It automatically generates integrity rules whilst establishing connections between different databases.
3. ANS QuickBuild allows users to maintain information that is being held in databases.
4. ANS Report Organiser is a tool that supports information search and retrieval and supports presentation of the same on word processing applications. This leads to low maintenance costs and saves additional costs for making add-on applications. The use of extensible Markup Language and extensible Stylesheet Language as primary standards in the development of the ANS toolkit ensures that other software applications have the ability to interact with existing data in ANS toolkit, thereby ensuring true heterogeneity. As the HyperText Transport Protocol (HTTP) interface is an integral part of the ANS toolkit, all applications built with it are accessible via web browsers.

IV. CONCLUSION

We contend that Mobile Computing based technologies such as PDA and WLAN in conjunction with healthcare applications based on OOT that support workflow, could make the vision of an Integrated Healthcare Information System a reality. We further reflect that the next step is to look at modern and innovative low cost solutions that are based on the technologies described in this paper.

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