
Introduction

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Biographical notes: Dr. Dag von Lubitz currently serves as the Chairman and Chief Scientist at MedSMART Inc. and the Adjunct Professor at H&G Dow College of Health Sciences at Central Michigan University. After a very active career in stroke research, the current work of Dr. von Lubitz is devoted to medical simulation, telemedicine and medical training with a particular emphasis on global dissemination of medical technology and advanced medical education. Author of over 100 peer-reviewed publications and holder of prestigious international awards, Dr. von Lubitz is a frequent keynote speaker at international scientific conferences and symposia devoted to medical technology and e-health.

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Effective conduct of healthcare operations is not only extremely expensive but also extremely complex, particularly when executed at the global scale. Most healthcare problems affecting the world have multiple roots involving social, economical, political, and even geographical factors whose combination provides fertile grounds for the spread of illnesses, prevalence of trauma, enhanced mortality, *etc.* (Evans, 1993). It has been hoped that vigorous use of Information/Computer/Communications Technologies (IC2T) will, in similarity to some forms of business operations, obviate the growing chaos of global healthcare. While IC2T changed many aspects of medicine, the explosive growth of worldwide healthcare costs indicates that a mere introduction of advanced technology does not solve the problem (Kyprianou, 2005; von Lubitz and Wickramasinghe, 2006). The quest for financial rewards provided by the lucrative healthcare markets of the Western world led to a plethora of dissonant healthcare platforms (*e.g.*, electronic health records, diagnostic tools, or administrative management systems) and limited extent (local/regional) networks, but fail to provide a unified national or international service (Onen, 2004; Olutimayin, 2002). In addition, there is a striking lack of standards that would permit seamless interaction or fusion of non-healthcare (*e.g.*, economy or local politics) and healthcare knowledge creation and management resources. Thus, despite the massive amount of information that is available to healthcare providers and administrators, despite availability of technologies that, theoretically at least, should act as facilitators and disseminators, the practical side of access to, and the use and administration of healthcare are characterised by increasing disparity, cost, and persistent chaos (Banjeri, 2004).

The emergence of the IC2T sector can be considered as a result of evolution and convergence many industries, but in particular the information, computers, telecommunications, media and entertainment. Considering the three basic elements of IC2T – networks, services and terminal equipment, we can define the main factors that determine the evolution of these elements and the main trends which fully characterise the process of the IC2T sector's evolution.

New technologies provide for virtually exponential growth of network capacity, increasing substantially network capabilities, and reducing cost of information transmission. The necessity of rapid growth of network capacity is due, firstly, to boom the growth of traffic, especially data. The great growth of traffic in communications networks is determined by a number of factors, among which the following should be mentioned accelerated development of the internet and escalating applications of

graphic and video information exchange. The compilation of papers in this special issue discuss a variety of issues that pertain to networking when it comes to the domain of healthcare operations.

'Development of a wireless rural telemedicine network and management system' by Zadari addresses the development of a low-cost wireless telemedicine network and a management protocol for rural Palestinian clinics. The system provides rural clinics with an access to medical specialists through a wireless connection to the internet using a cellular phone, a Wireless Access Protocol WAP through the GSM/GPRS network.

'Use of Coloured Petri Net models in planning, design, and simulation of intelligent wireless medical device networks for safe and flexible hospital capacity management' by Sloane and Gehlot describes use of a formal simulation modelling tool, the Coloured Petri Net (CPN), to assist with wireless medical network pre-planning and ongoing configuration change management. The CPN model described is proposed to be an effective Verification and Validation process for the wireless medical device network to ensure patient safety and also to facilitate the necessary clinical outcomes.

'Availability of healthcare services in a network-based scenario' by Setola details how the input-output inoperability model has been applied on a highly information rich hospital to compare its behaviour in the presence of a failure in the IP network with respect to a more classical structure. In this way, the paper outlines how it is necessary to build robust networks so that effective and efficient healthcare operations can indeed ensue.

Quality and effectiveness are again the central theme in the fourth paper of this special issue 'Enhancing quality of data through automated SARS contact tracing method using RFID technology' by Bahri.

In developing value driven, patient-centric healthcare delivery solutions it is important to be cognisant at all times of developments in other areas that are relevant and might be beneficial if transferred to the healthcare domain. The last four papers 'Exploring the transaction dimensions of supply chain management' by Lietke and Boslau. 'An initial research agenda for SCM information systems' by Caldelas-Lopez *et al.* 'Entrepreneurial networks in highly globalised industries: the case of the Greek shipping industry' by Stefanidis *et al.* and 'Virtual enterprise formation and partner selection' by Petersen do not directly address healthcare issues but they do address critical issues pertaining to networking and telecommunications that are indeed relevant to a healthcare context as well and thus have been included.

The papers that make up this special issue by no means cover the breadth or depth of critical aspects pertaining to networking in the current healthcare environment. However, they do highlight many of the significant issues, major barriers and facilitators that impact networking considerations in relation to healthcare delivery and do serve to underscore the importance of networking in the designing of effective, efficient and value driven healthcare. What becomes of vital importance is the ability to effectively harness the full potential of these new technologies so that enhanced healthcare operations, and effective and efficient, quality healthcare delivery is indeed achieved.

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