Chapter 1.8
Networkcentric Healthcare and the Entry Point into the Network

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INTRODUCTION

The concept of e-health gains rapid and widespread international acceptance as the most practical means of reducing burgeoning healthcare costs, improving healthcare delivery, and reducing medical errors. However, due to profit-maximizing forces controlling healthcare, the majority of e-based systems are characterized by non-existent or marginal compatibility leading to platform-centricity that is, a large number of individual information platforms incapable of integrated, collaborative functions. While such systems provide excellent service within limited range healthcare operations (such as hospital groups, insurance companies, or local healthcare delivery services), chaos exists at the level of nationwide or international activities. As a result, despite intense efforts, introduction of e-health doctrine has minimal impact on reduction of healthcare costs. Based on their previous work, the authors present the doctrine of *network-centric healthcare operations* that assures unimpeded flow and dissemination of fully compatible, high quality, and operation-relevant healthcare information and knowledge within the Worldwide Healthcare Information Grid (WHIG). In similarity to network-centric concepts developed and used by the armed forces of several nations, practical implementation of WHIG, consisting of interconnected entry portals, nodes, and telecommunication infrastructure, will result in enhanced administrative efficiency, better resource allocation, higher responsiveness to healthcare crises, and—most importantly—improved delivery of healthcare services worldwide.

BACKGROUND: CURRENT ISSUES OF E-HEALTHCARE

Major shifts in political and economical structure of the world that took place in the 20th century were instrumental in focusing global attention

on healthcare and its importance in maintaining stability and growth of nations. At the same time, the cost and complexities of national and global healthcare operations became increasingly apparent (World Health Organization Report, 2000, 2004). In order to be efficient, healthcare providers and administrators became progressively more dependent on a broad range of information and knowledge that spans the spectrum stretching from purely clinical facts to the characteristics of local economies, politics, or geography. Consequent to the elevating demand for knowledge is the flood of a wide variety of uncoordinated data and information that emerges from multiple and equally uncoordinated sources (von Lubitz & Wickramasinghe, 2005b, 2005c). It has been hoped that vigorous use of IC^2T (Information/Computer/Communications Technology) will, in similarity to some forms of business operations, obviate the growing chaos of global healthcare. While IC^2T 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 (Fernandez, 2002: von Lubitz & Wickramasinghe, 2005). 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) that operate well within circumscribed (regional) networks but fail to provide a unified national or international service (Banjeri, 2004; Olutimayin, 2002; Onen, 2004). There is a striking lack of standards that would permit seamless interaction or even fusion of nonhealthcare (e.g., economy or local politics) and healthcare knowledge creation and management resources. The "inward" concentration of the Western societies on their own issues causes progressive growth of technology barriers between the West and the less developed countries, while the essentially philanthropic efforts to address massive healthcare problems of the latter continues to concentrate on "pretechnological" and often strikingly inefficient approaches (Banjeri, 2004; Olutimayin, 2002). 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 characterized by increasing disparity, cost, and burgeoning chaos (Larson, 2004). Solutions to many of these acute and disturbing problems may be found in the recent approach chosen by the defence establishments of many countries to the information needs of the battlefield and to the modern, highly dynamic combat operations (von Lubitz & Wickramasinghe, 2005a).

DOCTRINE OF NETWORK-CENTRIC HEALTHCARE OPERATIONS

Our previous publications (von Lubitz & Wickramasinghe, 2005a, 2005b, 2005c) discussed the general principles and applicability of the military network-centric operations concept and its adaptation to modern worldwide healthcare activities. Network-centric healthcare operations are physically facilitated by the World Healthcare Information Grid (WHIG)—a multidimensional communications network connecting primary information collecting sources (sensors) with information processing, manipulating, and disseminating nodes. The nodes also serve as knowledge gathering, transforming, generating, and disseminating centres (Figure 1).

In similarity to the already proved attributes of network-centric military operations (Cebrowski & Garstka, 1998) of which, at the simplest level, the command centre of a joint naval task force is the simplest example and the execution of Operation Iraqi Freedom probably the most complex one, healthcare activities are characterized by multidirectional and unrestricted flow of multispectral data (von Lubitz & Wickramasinghe, 2005b, 2005c). All data, information, and node generated knowledge are characterized by fully compat-