Chapter 8.13
The S'ANT Imperative for Realizing the Vision of Healthcare Network-Centric Operations

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ABSTRACT

In the information-intensive environment of healthcare, the networkcentric approach has been proffered as one that allows free and rapid sharing of information and effective knowledge building required for the development of coherent objectives and their rapid attainment. This article asserts that if we are to realize such a vision it is imperative to draw upon strong rich analysis tools and techniques and thus calls for the application of Social Network Analysis combined with Actor-network Theory (S'ANT).

INTRODUCTION

Environmental complexity of healthcare operations is often magnified by the presence of multiple actors (agencies, governmental bodies, global organizations, etc.) who perform within the same space, but use a wide variety of independent and non-intercommunicating platformcentric tools. As a consequence of the resulting chaos, the attainment (mission) of healthcare goals (objectives) is uncertainty – rather than being information-driven (von Lubitz and Wickramasinghe, 2005; 2006e). In response to the inefficiency of the highly fragmented programs to address even the most urgent aspects of healthcare across the globe, a demand for the development of a new rule set (Barnett, 2004; Onen, 2004; Olutimayin, 2002; Banjeri, 2004) governing the future actions began to emerge – the quest for the "doctrine of global health."

In response to this void von Lubitz and Wickramasinghe (2006b-e) proffered the doctrine of networkcentric healthcare. This doctrine finds

its operational predecessor in the military application of information and decision support system networks based on uniform and widely distributed access, collection, processing, and dissemination standards (Cebrowski and Garstka, 1998). The doctrine calls for the development of interconnected information grids that, together, constitute a powerful and well-structured network that facilitates information sharing among all participants within the operational continuum (space, see Cebrowski and Garstka, 1998; Stein, 1998). Consequent to improved information sharing is the enhancement of its quality and integrity which, in turn, escalates the level of situational awareness that is the foundation for efficient, real-time collaboration among the involved entities, their self-synchronization, and operational sustainability. The overall operational effect of networkcentricity was a dramatic increase in mission effectiveness (Cebrowski and Garstka, 1998) whose success, even at the earliest trial stages, led to the adaptation of networkcentric concepts by several armed forces across the globe. For the same reason, the doctrine begins to find its place in the modern, ICT-driven business world (ibid).

THE CONCEPTUAL BASIS FOR NETWORK-CENTRIC OPERATIONS

The cardinal details of the networkcentric doctrine of healthcare operations have been described in detail by von Lubitz and Wickramasinghe (2006b-e). The doctrine is rooted in the pioneering work of Boyd (1987) (see also von Lubitz and Wickramasinghe, 2006b-ed-e) who analyzed the process of decision making and the fundamental principles of interaction with, and control of, a fast paced and dynamic environment. Critical research-based projects (as applicable in the area of information systems and health) have a growing tradition of qualitative inquiry. Despite its relativist ontology, actor-network theory places a strong emphasis on empirical inquiry and so actor-network theory is ideally suited to the generation of detailed and contextual empirical knowledge (Doolin B and Lowe A, 2002). Following its initial military applications, Boyd's OODA Loop as it is presently known, found many adherents and practical uses in a wide variety of civilian applications including medicine (von Lubitz et al., 2004 von Lubitz and Wickramasinghe, 2006a-e).

THE NATURE AND DEFINITION OF THE DOCTRINE OF NETWORK-CENTRIC HEALTHCARE

Following the inate nature of actor-network theory, the intricate and mutually constitutive character of the human and technology (in the processes and relationships of illness and health) has been demonstrated (Prout, 1996). In addition to this "micro" example, successful interaction with complex sets of macro-environments (macro-environment galaxies) such as global healthcare (which comprises a vast array of independently identifiable macro-environments) presents an insurmountable task *unless assisted by a highly sophisticated, multilayered network of ICT that incorporates a full range of telecommunication platforms, sensors, data storage elements, analytical nodes, and dispersed access points, the operation of which provides flexible command and control and rapid response capabilities*.

The doctrine of networkcentric healthcare has its roots in networkcentric computing (von Lubitz and Wickramasinghe, 2006b-e) whose practical development has been greatly facilitated by the rapid progress of various areas of ICTs (e.g., HTML, TCP/IP, Web, JAVA, XTML, etc (– refs Hironaka, 1992, Valdes et al., 2003)). The principal task of networkcentricity in healthcare operations is to develop the state of *information superiority*.

The state of information superiority provides the actors with the critical *operational advantage* that allows them to determine and dictate the