Proposing and Testing SOA Organisational Structures: A Case Study Approach

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ABSTRACT

Longstanding Healthcare Information Systems (HIS) integration challenges drove healthcare organisations to invest in new paradigms like Service Oriented Architecture (SOA). Yet, SOA holds challenges of its own, with SOA Governance surfacing on the top. This research depicts the development of a conceptual SOA Governance Element entitled “Organisational Structures”. This element is part of a SOA Governance framework that includes nine distinctive elements with SOA Organisational Structures being one of the critical ones. The conceptualisation of the proposed element is based on the authors’ previous research, grounded in the normative literature and further developed to include healthcare aspects. The proposal is tested in a large Greek hospital utilising qualitative methods and the findings presented herein. This proposal aims to pinpoint attributes and guidelines for SOA Organisational Structures, required to successfully govern SOA and tackle longstanding HIS challenges.

Keywords: Healthcare Information Systems (HIS), Healthcare Specific Attributes, IS Management, Organisational Structures, Service Oriented Architecture (SOA) Governance

INTRODUCTION

The complexity of providing health services presents different challenges in structuring healthcare organization due to their diversity of facilities, qualifications of staff, size, and variety of goals (e.g. inpatient, outpatient care, research, teaching, and prevention) (Duffield, Kearin, Johnston, & Leonard, 2007). Healthcare organizations are bureaucratic structures characterized by a hierarchical authority system, a highly developed horizontal division of labour, and an elaborate structure of rules and roles for controlling behaviours (Yang, Fang, & Lin, 2011). This structure is more often called functional departmentalization. In this structure, decisions are generally centralized with information flow following the hierarchy of a high degree of formalization (Creteur, Pochet, Pouplier, & Closon, 2002). Moreover, this structure ensures an optimal resource use, integration of knowledge and functional excellence, but lacks reactivity and flexibility (Yang et al., 2011).
A different healthcare structure is the divisional, where divisions are created around the services-customers-markets, with departments relatively autonomous contrary to the functional configuration. The divisional structure ensures flexibility, reactivity and a greater attention to the customer requirements. Despite, the creation of strong coordination between the groups (multidisciplinary views) the resource consumption is the weak point of this structure, as the resources (e.g. financial, skills etc.) are expanded for various divisions, without possible sharing between them (Creteur et al., 2002). Evermore, hybrid approaches, such as: (a) Clinical Directorate (CD) service structure, designed to induce collaboration and involve clinicians in financial and management decision-making (Braithwaite et al., 2005), (b) the doctor-manager approach in which doctors act as managers (Day, 2007) and the nurse-manager in which nurses are involved in managerial positions (Norrish & Rundall, 2001) are introduced in healthcare. These hybrid approaches reflect on a more decentralised decision-making and thus provide greater flexibility in the overall organisational structure.

In this respect, many healthcare strategies tried to strategically renew healthcare through large scale restructuring, yet there is uncertainty about whether there is the best way, or even a particular way, to structure a healthcare organization (Chryssanthou, Varlamis, Sarivougioukas, & Apostolakis, 2012; Duffield et al., 2007). This is evident as the constant restructuring of health services suggests that while it is fairly easy to determine a broad strategy, it is clearly more difficult to define the exact organisational structure necessary to support the overall strategy (Tjerbo, 2009).

Recently healthcare organisations turned to Service Oriented Architecture (SOA) to integrate their isolated systems and built a more reliable cost-effective Information Technology (IT) infrastructure (HL7/OMG, 2010). SOA is an architectural paradigm that supports reusability and emphasizes on breaking business processes into smaller blocks of functionality (e.g. services). These small blocks are well defined, self-contained modules that provide standard business functionality and are linked together to build an integrated business process (Papazoglou, 2003). In essence, SOA builds upon previous architecture methodologies to offer healthcare services available to the entire organization through a standard interface. Organizations that adopt SOA can: (a) reduce costs, (b) provide higher return on investment (c) reuse and integrate services and legacy systems, (d) reduce time to market and (e) better align business with IT (Koumaditis & Themistocleous, 2011; Marks, 2008; Mueller, Viering., Legner., & Riempp., 2010).

Nevertheless, literature indicates that IS integration strategies including SOA, require the support of Service Oriented Architecture (SOA) Organizational Structures to be successfully implemented (Beimborn, Joachim, & Weitzel, 2008; Bernhardt & Seese, 2009; F. Hojaji & M. R. A. Shirazi, 2010; Janiesch, Korthaus, & Rosemann, 2009; Mountzoglou & Kastania, 2013; Niemann, Miede, Wolfgang, Repp, & Steinmetz R., 2010; Schepers, Iacob, & Van Eck, 2008). Therefore in this paper we structure and propose a SOA Organisational Structure with attributes, sub-elements and guidelines and test it in a real-life scenario in a healthcare setting.

**SERVICE ORIENTED ARCHITECTURE (SOA) STRUCTURE**

Providing a closer look at the SOA literature as presented in a recent review by Koumaditis and Themistocleous (2013) reveals that the creation of a SOA Governance Organisational Structure is a basic consideration amongst many SOA researchers. This is evident as the majority of authors (studied in the aforementioned research) include the SOA Organisational Structure as a basic element of their SOA Governance model and link it in great extent with other elements (Koumaditis & Themistocleous, 2013). Yet, as discussed in the same rigorous review not all the identified models portray this element in the
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