Proposing and Testing SOA Governance Process: 
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 “SOA Governance Process”. This element is part of a SOA Governance framework that includes nine distinctive elements with SOA Governance Process 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 proposition 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 Governance Process, required to successfully govern SOA and tackle longstanding HIS challenges.

Keywords: Governance Process, Healthcare Information Systems (HIS), IS Management, SOA Governance

1. INTRODUCTION

The United States spends 17.6% of gross domestic product (GDP) on health care while the average in the European Union (EU) is 7.4%, with a prediction that the cost will increase in the future due to an increasingly aging population (from 600 million people aged 60 and over in 2000, to 1.2 billion by 2025) as the associated care demands for increased chronic illnesses (Fitzpatrick & Ellingsen, 2013). In the past, healthcare organizations worldwide attempted to invest in HIS in order to be more efficient, balance their functional costs and increase the quality of their services (Dwivedi et al., 2013; Pelone et al., 2014). Yet, HIS hold various challenges, such as: (a) IT infrastructure complexity, (b) the non-integrated nature of HIS, (c) medical errors and (d) the lack of global service provision (Lunt et al., 2011; Tan, Wen, & Awad, 2005). Besides, integrated technologies that have been employed by healthcare organisations, to tackle these challenges, have not shown great levels of adoption due to their barriers, like: (a) high costs, (b)

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resistance to change, (c) organisational issues, (d) high complexity, (e) large scale of change, (f) time consuming implementation and (g) politics.

Thus, the need for integrated HIS in a safer, interoperable and more manageable environment motivated organizations to consider the adoption of paradigms, such as SOA. SOA can be valuable for a healthcare organisation as it provides interoperability and integration of the legacy HIS. Still, despite SOA benefits Heffner (2009) indicates that, 41% of SOA users in the Global 2000 firms believe that: (a) SOA has delivered less benefit than expected, (b) 17% claim they face problems and (c) will not expand SOA use. This reveals that even though SOA is considered a valuable architectural paradigm its application, efficiency and performance are affected by various factors. These statistics indicate that almost half the companies that implement SOA have not figured out how to benefit from their projects. This is attributed to unclear or weak governance planning (Stephens, 2008). In a recent research on the global status of IT governance standards and models (like COBIT, ITIL/ISO20000 etc.) the findings reveal a tendency to adopt such frameworks, but also a lack of a clear “winner” amongst them. For example, amongst 834 business executives, from 21 countries and 10 industries reveal that ISO20000 or ITIL is referred in 28% of them, while COBIT in 12% (M. B. Miles & Huberman, 1994). Yet, out of the 839 respondents only 10% have been healthcare executives, thus the percentages drop lower regarding their focus on IT governance in healthcare.

In an attempt to study this issue, in a previous rigorous study the authors focused on SOA Critical Success Factors (CSFs) in healthcare, like: (a) alignment of SOA, organization, human and legal aspects, (b) clear goals set from the beginning of the endeavour, (c) complexity introduced to the system, (d) cost, funding and sponsoring the SOA project, (e) SOA culture that can create support and communication between the stakeholders, (f) experience, skills and training of the employees, (g) governance plan to provide compliance and check services concerning capability, security and strategic business alignment, (h) long-term planning to include reusable services that fit future business, (i) adequate measurement of the compliance and performance, (j) maturity identification and progress of the organization in aspects as IT, organization etc., (k) identification of the right candidate projects/pilots, (l) security risks (data confidentiality, access control), (m) detailed roadmap, (n) adequate standards (e.g., XML, WSDL, REST, HL7 etc.), (o) a team with understanding and experience in change management and clear vision of SOA, and (p) testing of the services and impact (Koumaditis, Themistocleous, & Rupino Da Cunha, 2013).

The outcome of the study, emphatically demonstrated that the most frequently reported CSF in the cases reviewed is SOA Governance. In a nutshell, the findings reveal that SOA implementations require governance mechanisms to excel, otherwise the architecture will end up complex, uncontrolled, brittle and eventually discarded (Marks, 2008). A failure in a healthcare organisation’s IT infrastructure is not an option as the literature is full of cases where healthcare IT failures cost patients’ lives (Johnson, 2011; Kamoun & Nicho, 2014; Kaplan & Harris-Salamone, 2009). This motivates us to study SOA Governance in healthcare. SOA Governance is a research area with many issues (e.g., scope, model, associations) uncharted. In an attempt to fill this literature gap, this research paper, aims to present our work on SOA Governance and specifically in SOA Governance Process which is a key element for any SOA Governance framework. In doing so, resulting in the development of a proposition that can be used to support decision-making on SOA Governance issues. The remaining of the paper is structured with Section 2 presenting the SOA Governance Process Literature Review, Section 3 the Research Methodology, Section 4 the Testing and Empirical Data, Section 5 the Discussion and Section 6 the Conclusions.
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