

Chapter 10

Federated Enterprise Architecture: Meaning, Benefits, and Risks

Edward M. Newman
National Defense University, USA

ABSTRACT

*The purpose of the chapter is to provide clarity on what a Federated Enterprise Architecture (FEA) is and what the benefits as well as risks are in contrast to a non-federated enterprise architecture. The chapter draws upon organizational theory, federalist theory, and case studies to explicate what constitutes a federated model and the expected federated EA benefits. There are a number of challenges with the concept of a FEA. Two are focused on in this chapter: the meaning of federated EA and associated benefits and risks. The first is the use of the term “federated,” which occurs rather frequently in ICT literature, such as “federated search” or “federated database design,” and in the context of IT governance, “federal model” in Drs. Weill and Ross’s book *IT Governance*. The term also appears in the non-ICT context such as “federated insurance.” However, the term “federated” is frequently not defined and when defined speaks to a decentralization concept. This distinction is relevant to the understanding and success of a federated EA implementation. In reviewing federalist theory, there is a clear difference between decentralization and federalism. It is argued that the so-called federal or federated “model,” as described, is not federated but is a form of decentralization. The second challenge within the EA discipline is the lack of benefits attributed to a FEA. In the few sources that exist for FEA benefits are either not stated or the stated benefits could equally apply to a non-FEA. It is argued that scalability is the singular key benefit that FEA provides over a non-FEA, and the following non-FEA benefits are enhanced: 1) agility and IT innovation, 2) process consolidation and business process standardization and discipline, and 3) interoperability. However, while there are clear benefits to FEA, there are inherent risks.*

DOI: 10.4018/978-1-4666-4518-9.ch010

INTRODUCTION

Within the discipline of Enterprise Architecture (EA) there is an emergence of an EA style or archetype – Federated Enterprise Architecture (FEA) or hybrid (Allega, 2009; Burke & Tuft, 2012; DoD CIO, 2007; Drecun, 2003; Fernandez, Zhao, & Wijegunaratne, 2003; Ross & Beath, 2005; Roy, 2006; Wilson, 2012; Zachman, 2006). The advancement of this new form of EA has been argued as a response to today's complex organizational structures such as networked Multinational Corporations (MNC), M-form, and large federal government entities (*i.e.*, Cabinet level Departments) (Allega, 2009; Zachman, 2006) who through competitive pressures and/or scale are attempting to optimize centralization and decentralization structures and management controls to improve organizational performance (Chandler & Mazlish, 2005; Prahalad & Doz, 1981).

There is pragmatic interest in a FEA, based on a recent informal survey taken by Gartner during a Webinar of 74 responses 11% indicated they are pursuing a federated EA approach (Burton, 2010). There is also interest in FEA by the public sector. The United States' Department of Defense (DoD CIO, 2007) and the Department of Health and Human Services (United States, 2010) are pursuing a FEA and the national governments of Canada (Ministry of Information and Communications Technology, 2006), Jordan (Roy, 2006), and Uganda (Rwangoga & Baryayetunga, 2007) have proposed the use of a FEA as a component of their respective E-Government programs. Curiously enough, at least in these public sector examples, justification for selecting an FEA approach rather than a classical or non-FEA is omitted. Given that the empirical evidence for the benefits of classical EA is wanting (Boucharas, van Steenberg, Jansen, & Brinkkemper, 2010). What empirical or theoretical evidence is there to support the adoption of an FEA over a non-FEA? Are there additional risks and do they outweigh the benefits? If the scope is extended to include IT Governance as a complement to enterprise

architecture (Sambamurthy & Zmud, 1999; Weill & Ross, 2004; Weill & Ross, 2005; Willson & Pollard, 2009), additional key insight is revealed.

Weill and Ross (2004) in their book *IT Governance* observed, for 74 government and not-for-profit organizations, most used a federal approach (as described similar to federated) for IT Governance input (to include IT principles, IT architecture, IT infrastructure), but not for the corresponding *decision execution*. Furthermore, of the six archetypes identified, they state "The federal model is undoubtedly the most difficult archetype for *decision making* because enterprise leaders have different concerns from business unit leaders" (p. 61). Returning to the private sector, of the top three IT governance performance strategies only two include a federal archetype and only for one of the five decision criteria – Business Application Needs (Weill & Ross, 2004), a narrow application of a federal strategy. In a separate study of 356 multibusiness firms, Tanriverdi (2006), focused on the performance effects of IT synergies and found that of three IT governance modes (centralized, decentralized and hybrid), the hybrid mode was statistically the least effective, supporting prior observations by Brown (1998; 1999). As described, the hybrid IT mode combined central and decentralized decision-making and shares characteristics of a federal model or federated structure. Taken all together, not a resounding affirmation for a FEA approach – what then is the allure?

Where is the empirical or theoretical evidence to support a FEA approach? None in the Government examples above provided evidence and the advocates of an FEA do not provide empirical evidence and theoretical arguments are inconsistent. Perhaps confidence in a federated approach lies in other disciplines. Does the answer reside in the IT discipline, based on some familiarity with federated databases or search design concepts that have demonstrated promise in addressing the challenges of heterogeneous and autonomous environments (Haas, Lin, & Roth, 2002; Hsiao, 1992; Lu & Callan, 2006; Sheth & Larson, 1990)?

28 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/federated-enterprise-architecture/80917

Related Content

Willingness to Use Electronic Revenue Collection System: Moderating Effect of E-Collection Training on the Extended Technology Acceptance Model

Sulaiman Haruna and Normalini Md Kassim (2019). *International Journal of Enterprise Information Systems* (pp. 60-74).

www.irma-international.org/article/willingness-to-use-electronic-revenue-collection-system/238836

E-Learning: An Investigation into Students' Reactions to Investment into IT at Tertiary Institutions

Solitaire Maherry-Lubbe (2007). *Managing Information Communication Technology Investments in Successful Enterprises* (pp. 277-306).

www.irma-international.org/chapter/learning-investigation-into-students-reactions/25863

Levels of Enterprise Integration: Study Using Case Analysis

Delvin Grant and Qiang Tu (2005). *International Journal of Enterprise Information Systems* (pp. 1-22).

www.irma-international.org/article/levels-enterprise-integration/2073

A Knowledge-Based User Interface to Optimize Curriculum Utility in an E-Learning System

Hamed Fazlollah Tabar and Amir Muhammadzadeh (2012). *International Journal of Enterprise Information Systems* (pp. 34-53).

www.irma-international.org/article/knowledge-based-user-interface-optimize/70014

An Optimal Missile Autopilot Design Model

Yong-chao Chen, Xin-bao Gao, Min Gao and Dan Fang (2018). *International Journal of Enterprise Information Systems* (pp. 104-110).

www.irma-international.org/article/an-optimal-missile-autopilot-design-model/198432