The Original Meaning of Enterprise Architecture

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Abstract

This paper reviews and reports on the origins of the term enterprise architecture and the resulting implications of the meaning of that term. As the National Institute of Standards and Technology was first to publish the term Enterprise Architecture nationally or internationally, in government or industry, the credit for and authority for definition of the term must fall to NIST. The government seems to have simply applied the NIST term for information management architecture to the problem of creating an information technology architecture required by the Clinger Cohen Act of 1996. The slight variation in terms does not seem to be significant to understanding this application of the term, and the U.S government seems to have understood and applied their term correctly in their policy document.

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The Original Meaning of Enterprise Architecture

Recently I have observed confusion among practitioners concerning the definition of the term Enterprise Architecture and its origin. I have undertaken to review and report on the origins of the term and the resulting implications of the meaning of that term. As Enterprise Architecture has significant influence on government spending and commercial activity, such clarification as provided in this paper hopefully may serve to reduce effort spent on debate over semantics, allowing for greater productive effort.

Discussion

In 1989 the National Institute of Standards and Technology (NIST) issued a paper titled ñInformation Management: The Integration Challengeò (Fong and Goldfine, 1989). This paper is apparently the first published to use the precise term ñEnterprise Architecture.ò The term is used in Chapter 7 (Architecture and Standards) to describe a five part approach to managing information technology labeled ñEnterprise Architecture.ò The five parts are: Business Unit Architecture, Information Architecture, Information System Architecture, Data Architecture, and Delivery System Architecture. A figure (Figure 7-1) titled ñEnterprise Architectureò illustrates the relationship of these five levels.

In 1996 the Clinger Cohen Act was passed by the Congress of the United States. This law included the establishment of Chief Information Officers in the federal government and charged that official with ñdeveloping, maintaining, and facilitating the

implementation of a sound and integrated information technology architecture for the executive agency.ò

After the passage of the Clinger Cohen Act of 1996, the policy of the United States regarding the management of information technology was amended to include reference to ñEnterprise Architecture.ò The relevant policy document is the Office of Management and Budget Circular A-130 (OMB 1996), which under the section labeled ñrecessionsò identifies the Clinger Cohen Act of 1996. Enterprise Architecture is described in this policy as having five parts, including: Business Processes, Information Flow and Relationships, Applications, Data Descriptions and Relations, and ñTechnology Infrastructure.

In 1987 Zachman, whom some credit with establishing the term Enterprise Architecture, published ñA Framework For Information Systems Architecture.ò This paper did not, however, use the term Enterprise Architecture. In 1989, Zachmanôs framework was discussed in Fong and Goldfine in Chapter 5, ñIntegration of Systems Planning, Development and Maintenance Tools and Methods.ò The early version of Zachmanôs now well known framework was presented under the title ñInformation Architecture.ò It was not linked in that document to the term Enterprise Architecture.

In 1992 Sowa and Zachman published a paper titled ñExtending and Formalizing the Framework for Information Systems Architecture.ò This paper also did not use the precise term Enterprise Architecture.

John P. Zachmanôs discussion of the evolution of the Zachman Framework documents that in 1992 Zachman published his framework as ñA Framework for Information Systems Architectureò in the 1992 IBM Systems Journal. In 1993 Zachman

International produced training material for Zachman International titled ñEnterprise Architecture ï A Frameworkò.

By 1996 Zachman appeared to have fully adopted the term Enterprise Architecture in reference to his framework in the papers ñThe Framework for Enterprise Architecture: Background, Description and Utilityò and ñEnterprise Architecture: The Issue of the Century.ò In the first of the two documents, Zachman states: ñThis lack of definition precipitated the initial investigation that ultimately resulted in the ñFramework for Information Systems Architecture.ò Although from the outset it was clear that it should have been referred to as a ñFramework for *Enterprise* Architecture,ò that enlarged perspective could only now begin to be generally understood as a result of the relatively recent and increased worldwide focus on enterprise ñengineering.ò

By 2010 Zachman described Enterprise Architecture in a different light, saying: ñThe big problem is that Enterprise Architecture (creating, optimizing, normalizing the Enterprise-wide, single-variable, *'primitive'* [*sic*] artifacts that constitute the engineering design descriptions of the Enterprise)é .ò This is a newer and different meaning of the term ñEnterprise Architecture.ò

Conclusions

As NIST was first to publish the term Enterprise Architecture nationally or internationally, in government or industry, the credit for and authority for definition of the term must fall to NIST. At the time of first publication of the definition by the NIST,

Zachmanôs framework does not seem to be viewed as an Enterprise Architecture either by Zachman, NIST or OMB.

The original meaning of the term Enterprise Architecture was, from the available evidence, a means for information management applicable to information technology. It had no apparent wider meaning at that time.

John P. Zachman in article on the evolution of the Zachman Framework indicates his belief that his father coined the term ñenterprise architectureò, however available facts do not support the notion that he did so alone. Instead the available data indicate that the 1989 NIST committee he was a part of coined the term, a team effort. His concurrent paper on the same publication did not use the term. It seems the credit goes to the committee.

The idea behind Zachmanôs framework, as it was in 1989, ñstrategy and information systems needed to be "engineered" for the ENTIRE Enterprise, not just "manufactured" by the I/S department: according to John P, Zachman. This was the notion of a vendor (IBM) improving the relevance and quality of its products. However the NIST view titled enterprise architecture revolved around an owning or acquiring organization managing all its IT assets.

On examination, the five-part Enterprise Architecture published by NIST in 1987 does not differ appreciably in approach from that published by OMB in 1996; only various supporting terms and semantics shifted slightly between the two dates. The U.S. Government seems to have simply applied the NIST term for information management architecture to the problem of creating an information technology architecture required by the Clinger Cohen Act of 1996. The slight variation in terms does not seem to be

significant to understanding this application of the term, and the U.S Government seems to have understood and applied their term correctly in their policy document.

While this author certainly agrees with the applicability of the tools and techniques of enterprise architecture to problems beyond information technology, including the wide applicability of Zachmanôs framework to various other problems, this does not change the facts or conclusions regarding the original meaning of the term Enterprise Architecture as referencing the management and organization of information technology.

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