REVIEW STUDY ENTERPRISE ARCHITECTURE FOR COMPUTER SCIENCE

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ABSTRACT

Enterprise architecture refers to a company's method of integrating business and information technologies. The EA Implementation Methodology involves the production, management, and upkeep of EA. In order to properly carry out business strategies, enterprise architecture, or EA, refers to the process of undertaking enterprise analysis as well as developing, organizing, and carrying out enterprise analysis. Enterprise architectural planning, or EA, is a process that helps organisations structure IT projects and policies to achieve the desired business results, to remain agile and resilient in the face of rapid change, and to stay abreast of industry trends and disruptions. EA is a process that uses architecture principles and practices. An example of enterprise architecture is EA. In order to properly carry out business strategies, enterprise architecture, or EA, refers to the process of undertaking enterprise analysis as well as developing, organizing, and carrying out enterprise analysis. Enterprise architectural planning, or EA, is a process that helps organisations structure IT projects and policies to achieve the desired business results, to remain agile and resilient in the face of rapid change, and to stay abreast of industry trends and disruptions. EA does this by using architecture principles and practices. An example of enterprise architecture is EA.

Keyword : Enterprise architecture, business , *technology,*

INTRODUCTION

The second portion of this thesis is comprised of three studies that, together, explain the theory behind this thesis. During the theory portion, the knowledge provided in the first part's background will be used. The word "EA" will be explained further throughout the research. There will be a comparison made between the newly crafted definition of EA and the previously established definitions. After that, some of the advantages of using an EA will be defined, and then the scope of an EA as well as the many methods that it may take will be talked with. The philosophy behind the EA frameworks is contained in the study. An enterprise architecture framework is required in order to construct a structure and get an overview of the many models and information about the organization. It is possible to utilize it to determine which models are lacking or to determine the pattern that must be adhered to in order to produce the models.

Additionally, the EA framework may identify and illustrate the relationships that exist between the models,

and it can help to the alignment of business and information technology, the redesign of businesses, or improved governance. This will provide a broad description of the EA frameworks, but a more in-depth discussion of the IAF framework will follow. Within the scope of this research, the EA tools will be analyzed. These technologies provide a systematic approach to modeling, storing, managing, and sharing information related to enterprise architecture. The tools give a formalism that can be used to construct an EA in an organized manner, and they are the assistance that can be used to facilitate communication inside the company. In this, the various tools' histories and the thinking processes that went into their creation will be discussed.

Software Architecture was chosen as an exemplar. There is not yet one single norm that applies across the board in this industry, which is still in its infancy as a subject of study. A system's Software Architecture is its high-level design, and it details the properties of the system that are considered to be the most essential. An essential function of an architecture is that it may be put to use in the process of verifying and validating the system's attributes. This enumeration describes software architecture as a collection of items that have connections among themselves. The following are some implications that result from this:

SOFTWARE ARCHITECTURE

Architecture not only includes information about how the parts connect to one another, but it also identifies the components that make up architecture. An architecture is first and foremost an abstraction of a system that hides the specifics of its parts, such as how they utilize other elements, are used by other elements, link to other elements, or interact with other elements.

Systems may and do consist of more than one structure, and no one structure can have a legitimate claim to being referred to as "the architecture";

Because every system can be proven to be built of components and relations among them, every system has an architecture. Specifically, every software system has an architecture because of this. Even while every system has an architecture, this does not automatically mean that the architecture is documented in detail. Fortuitously, an architecture might exist irrespective of its description or specification, which elevates the need of architecture documentation as well as architecture reconstruction;

ENTERPRISE ARCHITECTURE

Enterprise Architecture, sometimes known as EA, has been around since the early 1980s of the previous centuries. EA is becoming the answer, for an increasing number of businesses, to the problem of aligning business and IT. However, the concept of EA is not well understood by many businesses. Enterprise architecture is the most widely used but also the least understood term in the field of information technology, according to Gary A. Bolles. EA is the subject of a great number of published works in the modern world; yet, it would seem that each time a new article is presented for publication, a new definition of EA is also presented. So, what exactly does EA stand for? This research is broken up into five distinct sections in order to provide a response to the aforementioned issue and to provide a better understanding of the EA idea. The definition of EA will begin with an introduction and continue with an explanation. This definition will be utilized for the whole of this thesis, and it will provide an overview of the architecture in its current state, the architecture in its future state, and the transformation process. elucidates the many EA methods and techniques. The techniques that will be examined are the IT-centric, business process-centric, and governance-

centric approaches to enterprise architecture. The governance-centric approach to enterprise architecture is about governance since enterprise architecture includes a decision-making component. summarizes and discusses the advantages of using an EA. concern itself with corporate information systems. It would seem that these types of systems, such as ERP systems, have discovered a method to synchronize business operations with IT systems.

Definitions of Enterprise Architecture

Although there is a growing awareness that environmental assessment is highly essential, there is still not a widespread agreement on how to define environmental assessment. In, a new definition will be presented, and the goal of this new definition is to provide a broad definition. The idea that was learned from the research will serve as the foundation for the definition of enterprise architecture. Examples of a variety of architectures will be provided, along with discussion of how these separate designs might be combined to form an enterprise architecture. This discussion will contrast the newly defined architectures with those that already exist.

OBJECTIVE OF THE STUDY

1. Determine the areas in which already established frameworks, methods, and processes overlap with the Architecture Capability.

2. Determine a suitable goal for the capability's level of development

THE FUTURE OF BUSINESS ARCHITECTURE

An enterprise is a kind of organization that consists of a system that is under constant pressure to improve its performance and to adapt to an environment that is always changing. The development of technology that enables a global economy has resulted in bigger and more complicated organizations; yet, these enterprises need to be more flexible than they have ever been in order to cope with the increasing speed with which changes occur in their surrounding environment. Understanding how an organization operates and acts in response to external factors is necessary in order to achieve maximum efficiency in that organization's operations. Developing an understanding of the business is the primary objective of an EA. As a result, its definition need to be constructed in such a manner that it assists to comprehending the business. Therefore, the definition has to address the three requirements (structure, processes, and functions, all of which were specified in that are required to have an understanding of a system) in order to be considered accurate.

Information systems (hardware and software)

This definition is quite close to the one that was just introduced. The second component is an addition to the first component, which is the real definition; nonetheless, this component does not belong in the definition of an EA. Each company may choose which models are absolutely necessary to design their business architecture on their own. However, the definition does not take into account the connections that exist between the principles. There is just a connection between the models, and there is none between the principles or between the principles and their needs (what a system is supposed to do). Also in the definition of EA, which was presented in the models, there is no need that all aspects be of equal significance. You will require all of the models only if you want to obtain a thorough description of an EA, in which case they will all be treated with the same level of importance. On the other hand, it is not feasible to provide a comprehensive account of an

organization since there are so many perspectives, and these perspectives are always evolving.

The business analyst provides a methodical approach to understanding how an organization delivers value to its consumers while simultaneously improving performance [OCP]. A potential structure for a governance-centered BA is outlined in this article. This will be used to highlight all of the many components that are included in a governance-centric approach to BA, including but not limited to the following:

Mission: The fulfillment of the needs of the clientele is central to the purpose. It establishes the enterprise's legitimacy as a going concern;

Strategy: The enterprise's goals are used to outline how the strategy will be successful in achieving those goals. This includes the potential for organizations to learn new things, which paves the way for adaptation and regeneration;

Market: In this section, the guidelines for exploring and exploiting the market are outlined;

Competitors: In this section, the relative position of the company in relation to its rivals is defined;

Products and Services: In this section, the guidelines for the proper design of goods and services are outlined;

Eey Resources: provides an expression of concepts about the technology and human resources that are used in the delivery of goods and services;

Operating method: communicates the primary emphasis of the financial company. The concepts provide the framework for achieving monetary success;

Customers: the individuals who purchase the goods and services offered by the organization;

Environment: The actions will leave their mark on the surrounding natural world. Consequently, principles need to be articulated in such a manner that they make it clear that actions need to be carried out while keeping the surrounding environment in mind;

Stakeholders: those individuals who are either directly or indirectly impacted by the actions of the company.

Monitoring compliance and performance within this framework allows for accurate decision making to be carried out. The following, which is going to be all about governance, will provide explanations for conformance and performance. The emphasis in a governance-centric EA is placed on cooperation, and this framework contributes to the successful execution of the objective and strategy that have been decided upon.

PORTFOLIO MANAGEMENT OF CHANGE PROJECTS

The subsequent stage, which is the transformation process, is making the transition from the existing circumstance to the one that is wanted. The administration of these many kinds of change initiatives is referred to as portfolio management of change projects. It includes topics like preparing for system migrations and integrating computer systems. The Environmental Impact Assessment (EA) will provide the guidelines for the development by using its principles, and these recommendations will then be converted into the various design principles [Cap].

Traceability of Arguments

The 'traceability of arguments' is an essential goal that may be accomplished via the usage of an EA. This is done with the intention of making it apparent and easy to comprehend why a certain choice was made, as well as to recover the reasons that, at a later time, may be utilized for the goals of learning and auditing. Control is another one of EA's functions, and it brings with it new opportunities like auditing and diagnostics. This capability of EA is becoming more relevant in today's world. This is because the United States government has passed a number of laws pertaining to auditing and diagnostics (for examples, see [Cap] and [Cap]).

Communication with Stakeholders

"Enterprise architecture provides a mechanism that enables communication about the fundamental components and operations of the business."

Additionally, there is another advantage of EA. In order for people to understand one another, an Architectural Language is required, and EA satisfies the requirement for such a language by developing a formalism that can be used for communication. It enables communication on many elements of the company as well as between the various domains that make up the enterprise. Stakeholders will have a greater chance of understanding one other's issues if they communicate in this manner. Therefore, EA contributes to the creation of transparency for all of the enterprise's stakeholders. It is not necessary for the communication to take place amongst all of the stakeholders in the organization. Shareholders, for example, would not be interested in any and all models pertaining to the company. However, for other stakeholders, EA is the technology that enables information to be exchanged in an organized manner. Shared business processes and communication amongst managers in a governance-centric approach are two examples of improved communication that may be achieved with the assistance of enterprise architecture (EA). EA is also helpful in assisting with the integration of external partners. They are able to link quite simply with the systems of the company [AWG] thanks to this manner of doing things.

Some attendant benefits of using an EA are [AWG]:

When an organization already has one or more ADs, such as models, the development of an enterprise architecture (EA) is the best method to manage such ADs in a systematic manner. EA serves as the instrument for managing ADs in this manner. The relationships that exist between the ADs provide an additional value that does not occur in a single AD; the ADs may be employed in the creation or maintenance of systems, locations, etc., so that the systems are better matched to the scenario that is now taking place. In this case, an EA will also include specifications, such as those for a collection of systems that all have the same set of characteristics.

- Asset management: the company is fully aware of everything it has or makes use of, such as the number of systems, licenses, workers, and strategies it possesses.

- The architectures at the divisional level provide support for the architectures at the corporate level and are integrated with them.

- The advantages of adopting an IT-centered strategy

- The business and information technology (IT) alignment is the most essential aim of an IT-centric strategy, and this implies that .

- The highest possible level of support for the business processes;

- The highest possible level of support for the business processes' interactions with one another (both internally and externally)

The enterprise must be characterized with all of its many architectures as well as the links that exist between them, according to the concept of enterprise architecture (EA). In this approach, the System Architecture, Application Architecture, Software Architecture, and Information Architecture may be aligned with the Business Architecture. The Business Architecture will also include the business processes. Because of this, it is now very evident which aspects of the company are impacted by the IT, or will be influenced by it in the future, and in what manner. The As-is architecture is the product of the EA that was created to depict the existing state of affairs. The needs of the company become more apparent with the assistance of the as-is architecture, which in turn makes it simpler to define and choose the appropriate components on the information technology side. [Cap].

Benefits of a Business process-centric approach

To manage and enhance business processes is the most essential purpose of a business-process centric strategy, which has this as its primary focus. An enterprise architecture that is centered on business processes may help an organization become more customer-centric, which is one of its many advantages. The feedback provided by the customer serves as the "steering wheel" for the management and improvement of business processes in such a manner that they are managed and improved. One other advantage of EA is that it makes it possible to learn in a methodical and organized manner by establishing feedback loops at each level of the company. EA is used in this manner in order to satisfy the requirements and expectations of the client.

Benefits of a Governance-centric approach

- A greater knowledge of the company, which is what makes improved governance of it possible, is the most crucial purpose of a Governance-centric Enterprise Architecture (EA).

- It is feasible, via the process of deconstructing the enterprise business model, to evaluate business outcomes according to business domain (rather than functional contributions to the total) and to compare these results with appropriate benchmarks.

- The application of EA as a management tool has the benefit of organizing sensitivity for the context on every level of the organization, which is a significant competitive advantage. This boosts the organization's adaptability, and as a result, they are better equipped to react appropriately to changes in their surrounding environment.

- EA makes it possible to manage entrepreneurial autonomy and initiative at all levels of an organization, which ultimately leads in the full use of the creative potential of human beings.

- All of the stakeholders will have a far better understanding of business concepts and conformity with

the assistance of EA.

Enterprise Information Systems

There are instances of alignment between business and information technology, such as the Enterprise Information Systems (EIS). One organization that offers a wide variety of solutions in the area of business and information technology alignment is SAP. Many businesses simply would not be able to function properly without using Enterprise Resource Planning (ERP) software. SAP has developed into the de facto standard for many of the world's largest corporations. SAP stands for enterprise resource planning and is an integrated information and management system that can store and manage business activities. Modules have been created to record these procedures. The fact that the data contained in the modules are shared with one another ultimately results in a system that is completely integrated. Additionally, Philips makes extensive use of goods manufactured by SAP.

ERP systems such as SAP's R/ are structured with the fundamental economic reasoning of the corporate value chain as its organizing principle. It is a perspective of a company that is known as a process view, and it considers all business interactions to be stages in a value accumulation sequence. This sequence offers clients of a company with a complete portfolio of desired product qualities. This shift toward adap representations of corporate value chains would also forecast the growing creation of business object frameworks, which would result in a much-reduced semantic gap between an economic reality (an enterprise) and the computer representation of that reality. The most advanced enterprise resource planning (ERP) systems, such as the ones that are made available by SAP, fall into this category. The enterprise focus of these systems strives to combine accounting transaction processing with workflow, design, and engineering management. ERP systems, on the other hand, come with a hefty price tag in terms of their complexity.

A vision at the future

Although it is impossible to know what will happen in the future, this research will examine a number of scenarios that may play out. Within the context of these changes, EE plays a significant role.

The CIO-cockpit

Martin Luther King said the iconic words, "I have a dream that one day," at a speech at the Lincoln Memorial in Washington, District of Columbia, in the month of August. Through the use of these terms, he was highlighting his vision for an ideal society in the not-too-distant future. In addition, the CIO has a dream. In his dream, everything is linked to one another and operating in harmony. He is able to monitor what is going on with his information systems and respond appropriately depending on the data that he is taking in at any given time. He is able to monitor the transfer of data on a large screen that is installed in his office. He checks to see if there are any problems with the conveyance of the data, and he checks to see where the throughput of the data is beginning to slow down. He is able to view at any moment which information systems are creating what sort of data and which processes or other information systems are utilizing that data. He is also able to identify which information systems are producing the data.

The adaptive organization

Adaptive organizations are now being developed out of typical industrial groups that have their own

independent information technology platforms. Adaptive organizations have been referred to as web-based organizations that are backed by information technology by a number of writers. These businesses are working together with other businesses as temporary partners to achieve their goals. The terms global (particularly with the assistance of the internet), transparent (customers desire greater information), and virtual (the outsourcing of processes) are going to be used. As a consequence, this leads to the formation of a society in which information technology facilitates the optimum growth of both individuals and businesses. In the not-too-distant future, the environment in which businesses operate will undergo continual change. It is necessary for businesses to adjust to these developments. Components are the answer in order to give the necessary degree of flexibility. Architecture is the means through which new components and old systems may be integrated, as well as brought into alignment with preexisting procedures and the capabilities of the internet.

Traditional industrial enterprises Redefining

- New roles

- Application Development

- Increasing complexity

- Adaptive enterprises

Enterprise Architecture and IT-governance

Typically, businesses will initiate EA in order to improve their level of knowledge, which will hopefully lead to improved decision-making, particularly in regards to IT. Decision-making and, more specifically, the process by which choices are made inside an organization are at the heart of governance. Decisions may be reached using any one of the three distinct strategies with the assistance of EA. When adopting a strategy that is focused on information technology (IT), the primary kind of governance that is examined is IT governance. If you build your enterprise architecture on IT, your decisions will only reflect IT. On the other hand, if you pick a strategy that is centered on business processes, most of these choices will be made inside the company, and the governance will then be a part of enterprise governance. Because the EA is employed as a means to control the organization in the Governance-centric approach, IT governance is an essential component of organization governance.

CONCLUSIONS

The current investigation has produced new understandings, which have been disseminated by the researcher in the form of published articles in reputable journals, presentations at conferences of international and national repute, and also presentations in the internal workshops of National Informatics Centre, the organization that employs the researcher. The contributions are discussed in further detail down below. Conference and Exhibition, Melbourne, Australia: An overview of the EA technique that was used to develop and deploy Visual Enterprise, a software program for the Government of Andhra Pradesh, was described by the author in her work that was presented at the International Conference on Theory and Practice of e-Governance, 2011, which took place in 2011. The digital change in Land Services that is envisioned through Visual Enterprise is outlined, and it is anticipated that this will lead to improved citizen services.

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