Enterprise Architecture Framework: Basics and Ideas for Selection

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Abstract. In creating undertaking engineering, it needs to get or build up an EA system for big business design. There is an assortment of systems that can be used for the advancement of big business engineering. Suitable utilize and choice of the correct EA system will quicken and encourage the advancement of engineering, guaranteeing that the entire scope of outline arrangements and guaranteeing that chose design will encourage future improvement because of business needs. This paper means to give a review of how to pick EA Framework.

Keywords—EA; EA Framework; Zachman; FEAF; TOGAF

INTRODUCTION

In the advancement of an Enterprise Architecture (EA) it would be better and less demanding to take after a specific casing of thought. The idea system is known as the EA structure. As indicated by the CIO Council 2001 a system is a device that can be utilized to create wide scope of various designs. It ought to portray a strategy for planning data frameworks as far as the phases process gathering and demonstrating how the phases fit into each other. The utilization of the EA structure will expedite and encourage the improvement of engineering, guaranteeing complete scope of outline arrangements and guaranteeing that chose design will empower future advancement because of business needs.

Among the structures, According to an overview directed by Institute for Enterprise Architecture Development (IFEAD) in 2003 (FIGURE 1), the most broadly utilized as a part of industry and government are Zachman, TOGAF, IAF and FEAF.
With a similar overview between FIGURE 1 with FIGURE 2; in FIGURE 2 we demonstrate on how the business is much outside of the budgetary and protection structure. This is broadly utilized as a part of expansion to the own system is Zachman, TOGAF, and FEAF. This paper means to give a diagram of how to pick EA Framework.

**ENTERPRISE ARCHITECTURE**

Enterprise Architecture (curtailed EA) which is one of the controls in IT has definitions, for example,

a) Explanation of mission of partners including parameters of data, work, area, association, and execution. EA depicts plans to manufacture a framework or set of frameworks.

b) A coherent, extensive, and all-encompassing way to deal with outlining and executing framework and framework parts together.

c) Strategic data resource base, which characterizes the mission, data and innovation required to actualize missions, and the progress procedure to execute new advancements because of mission change needs.
d) EA has four primary parts: business design, data engineering (information), innovation engineering, and application engineering.

e) In connection to these four parts, EA items are charts, models, and/or stories that depict the endeavor condition and outline.

**EA FRAMEWORK AND EA PROCESS**

The EA Framework distinguishes the kind of data required to show endeavor design, arranges data sorts in consistent structures, and delineates the connection between the sorts of data. Data in big business engineering is regularly sorted in design models or points of view.

In building up the craft of big business improvement, it is important to acknowledge or create itself an EA system for the process on business advancement. There are different systems that can be used for the advancement on business improvement workmanship, for example, Zachman Framework, Federal Enterprise Architecture Framework (FEAF), Treasury Enterprise Architecture Framework (TEAF), The Open Group Architectural Framework (TOGAF), CUBE3 Architecture (Cube 3) and others.

The improvement of this EA system can be found in FIGURE 3 since John Zachman presented his venture engineering idea from 1987 to 2005.

![Timeline Enterprise Architecture](image)

**FIGURE 3. Timeline Enterprise Architecture**

For the improvement or administration with business design items there are different Processes/strategies that can be connected. Cases of EA examples include: DODAF Six Step Process, Enterprise Architecture Planning (EAP) by Steven Spewak in view of the Zachman Framework, Enterprise Information Architecture Building: Reengineering Information Systems by Melissa A. Cook which is additionally in view of the Zachman Framework, Practical Guide to the Federal Enterprise Architecture in light of the Federal Enterprise Architecture Framework (FEAF), and the TOGAF Architecture Development Method (ADM). In this paper, the EA Framework utilized is the Zachman Framework, though EA the procedure is Enterprise Architecture Planning (EAP).
One of the structures in business design advancement is the system presented by Zachman or called the Zachman Framework. Zachman Framework worked from different viewpoints and angles, in order to get a good result business design. The structure of Zachman Framework for the business improvement can be shown as in FIGURE 4.

The six lines in FIGURE 4 display six perspectives (point of view), as saw by the analyzer, proprietor, design developer, and working venture. The clarification is as per the following:

a) Planner/Designer: who sets the question in the level-headed discussion; Background, extension, and endeavor objectives
b) Owner/Owner: the beneficiary or end-client of the last item/benefit from the undertaking
c) Designer/Planner: middle people between what they need (proprietors) and what can be actually and physically available
d) Builder/Builder: boss/controller in creating last items/administrations
e) Subcontractor: in charge of building and introducing parts of the last item/benefit
f) Functioning endeavor: an unmistakable type of conclusive item/benefit

FIGURE 4. Zachman Framework

Highlights of the Zachman Framework:

a) Categorize expectations from EA
b) Limited utilization of EAs
c) Many are utilized far and wide
d) Less point of view
e) It is an apparatus for arranging
The Federal Enterprise Architecture Framework (FEAF) is a system presented in 1999 by the Federal CIO Council. The FEAF is proposed to build up an EA inside the Federal Agency. FEAF gives measures to creating and recording design portrayals of key need ranges. The FEAF is perfect for depicting the design of the Federal government.

FEAF isolates engineering into business ranges, information, applications and advancements, where FEAF now embraces three initially spaces on the Zachman system and EA's arranging strategy by Spewak.

At the current FEAF engineering (FIGURE 5) is given as a kind of perspective point to encourage successful and viable coordination of general business forms, innovation passage, witnesses and venture foods of Federal Agencies. FEAF gives a structure to creating, keeping up and actualizing working conditions at the best level and supporting the usage of the IT framework. In FIGURE 6 demonstrates a 5 X 3 network of FEAF grid with engineering sorts on even pivot and point of view on different tomahawks. The connection between EA items is found in grid cells.
Attributes of FEAF:

a) Is an EA Reference Model?
b) The standard is worn by the US government
c) Displays a thorough viewpoint of view
d) It is an instrument for arranging and correspondence

THE OPEN GROUP ARCHITECTURE FRAMEWORK (TOGAF)

The Open Group Architecture Framework (TOGAF) is a framework developed by The Open Group’s Architecture Framework in 1995. At first it was used by the US Department of Defense but its development was widely used in various fields such as banking, manufacturing and education. This TOGAF is used to develop enterprise architecture, where there are detailed methods and tools to implement it, this is what distinguishes it from other EA frameworks such as the Zachman framework. One of the advantages of using this TOGAF framework is because of its flexible nature and open source.

TOGAF views enterprise architecture into four categories as shown in FIGURE 7. The four categories are:

a) Business Architecture
   Explain how business processes are to achieve organizational goals
b) Application Architecture
   Describe how certain applications are designed and how they interact with other applications
c) Architecture data
   Is a representation of how storage, management and data access to a company?
d) Technical Architecture
   An overview of hardware and software infrastructure that supports the application and how it interacts

FIGURE 7. Enterprise Architecture by Open Group

TOGAF for the most part has the accompanying structure and segments (FIGURE 8):

1. Architecture Development Method (ADM)
   It is a noteworthy piece of the TOGAF that gives an itemized portrayal of how to characterize an endeavor design particularly in light of its business needs.

2. Foundation Architecture (Enterprise Continuum)
   Establishment Architecture is a "system inside a-structure" where there is a review of the importance of pertinent engineering accumulations, it likewise gives the utilization of help at the season of the exchange of various level reflections. Establishment Architecture can be gathered through ADM. There are three
divisions in establishment design, Technical Reference Model, Standard Information and Building Block Information Base

3. Resource Base
In this segment there is data on rules, formats, agendas, foundation data and supporting material subtle elements that help modelers in the utilization of ADM.

TOGAF- ARCHITECTURE DEVELOPMENT METHOD (ADM)

Architecture Development Method (ADM) is a consistent procedure from the TOGAF which comprises of eight noteworthy stages for the improvement and upkeep of the specialized design of the association. ADM shapes an iterative cycle for the entire procedure, middle, and in each stage where each new emphasis choice should be taken. The choice is gone for deciding the degree of big business scope, level of detail, target time to be accomplished and design resources for be investigated in big business continuum.

ADM is a typical strategy that, if fundamental, ADM can be adjusted to certain particular necessities, for example, in mix with different systems until the point when ADM produces particular structures to the association. ADM can be related to a cycle shot as appeared in FIGURE 9 which comprises of step nine stage process.

Quickly, ADM's eight stages are as per the following:

a) Preliminary Phase: Framework and Finance
   It is a planning stage that expects to affirm the duties of partners, the determination of the structure and the point by point system to be utilized on EA development.

b) Phase A: Architecture Vision
   This stage has the target of getting administration responsibility regarding this ADM phase, affirming the standards, destinations and business drivers, recognizing stakeholders. There are a few stages to accomplish this stage objective with input in demand for design, engineering and undertaking continuum. Yield of this stage is (1) building quality endorsement proclamation covering: Scope and limitations and architectural quality designs, (2) engineering standards including business standards, (3) Architecture Vision

FIGURE 8. TOGAF Components
c) Phase B: Business Architecture
Stage B expects to (1) select the perspective of a business-suitable engineering and choose the correct techniques and instruments (2) depict the current business design and its extension targets and examination of the holes between them. The info for phase B originates from stage A yield, while its output is the most recent modification of the outcome of stage A combined with the current business engineering and its expansion focuses in detail and in addition the aftereffects of the hole investigation, business architecture report and refreshed business needs.

d) Phase C: Information Systems Architectures
The reason for this stage is to create target engineering for information and/or application domains. On information engineering, for instance to decide the sort and wellspring of data expected to help the business in a way that is comprehended by the partners. On application design to decide the sort of application framework expected to process data and bolster the business.

e) Phase D: Technology Architecture
For the improvement of target innovation engineering that will be the premise of further implementation.

f) Phase E: Opportunities and Solutions
When all is said in done, it is a stage for evaluating and choosing the strategy for arrangement, identifying key parameters for changes, computing expenses and advantages of the venture and producing general implementation designs under the movement strategy.

g) Phase F: Migration Planning
This stage intends to streamline venture execution by needs and the rundown will be the basis for point by point plans of usage and movement.

h) Phase G: Implementation Governance
It is the phase of figuring proposition for each task usage, making architectural gets that will be the reference of the venture execution and keeping fit with the assigned design.

i) Phase H: Architecture Change Management
Toward the finish of this stage, it is planned to make a structural change administration scheme.

j) Requirements Management
Expected to give the procedure administration of design prerequisites all through the periods of the ADM cycle, distinguishing endeavor necessities, sparing and delivering it to significant stages.
To pick an EA Framework there are distinctive criteria that can be utilized as a kind of perspective, for instance:

a) The reason for the EA by taking a gander at how the meaning of design and its comprehension, the compositional procedures that have been resolved so natural to take after, bolster the development of the engineering
b) Inputs for EA exercises, for example, business drivers and innovation inputs
c) Outputs from EA exercises, for example, plan of action and progress outlines for development and change

The structure is a necessary piece of the EA plan that ought to have the accompanying criteria:

a) Reasoned
   A sensible system that can legitimize the deterministic engineering of making an unforeseen change and keeping up its trustworthiness notwithstanding the changing business and innovative changes and sudden request.
b) Cohesive
   The bound together structure has an arrangement of practices that will be adjusted in the way of its point of view and extension.
c) Adaptable
   The structure ought to have the capacity to adjust to changes that might be extremely frequent in the association.
d) Vendor-autonomous
   The structure ought not to depend on specific merchants to truly amplify benefits for the association.

e) Technology-autonomous

f) Domain-unbiased
   It is critical for the structure to have a part in sorting out organizational objectives.

g) Scale
   The structure ought to work adequately at departmental, specialty units, government and corporate levels
   without loss of center and capacity to be connected.

Of these criteria will be when mapped into a portion of the systems as of now talked about before.

CONCLUSION

The current EA Framework is not much different with the previous business process; each having preferences
and the disservices. Indeed, even the utilization of the EA system in every undertaking can be extraordinary. This
relies upon the qualities of the venture itself, the concentration to be accomplished and then some.

From the mapping comes about it can be closed for big business contextual investigations where there is still no
EA and the requirement for EA improvement is simple and clear then the proper EA structure is TOGAF.

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