Reclaiming the Names "Enterprise Architecture" and "Enterprise Architect"!

I have reviewed hundreds of job postings on LinkedIn with the words "Enterprise Architecture" and "Enterprise Architect" in the job posting title.

I found massive, rampant, semantic, intellectual, and professional deceit! None of the job postings I reviewed even alluded to duties, knowledge, expertise, or experience in enterprise architecture!

Almost all the "Enterprise Architect" related job postings predominantly expressed a requirement for explicit knowledge, skills, expertise, and experience to implement and use technology which may be necessary to build and implement systems, but not the knowledge, skills, expertise, and experience required to architect an enterprise.

I find it deceitful to take IT legacy know-how, re-label it, and promote it as the solution to all the deficiencies of the legacy IT, and then promote it as a new and advanced service with an attendant escalation in price.

Mostly, I found that there is a pervasive movement to inflate job titles and rates of pay for positions that have pretty much the same job content they had when they were called analysts, application developers, data analysts, database administrators, IT strategists, and planners; almost all of which required a broad spectrum of IT-related knowledge, skills, expertise, and experience. Not one job description indicated a requirement for knowledge, skills, expertise, and experience in architecting, engineering, and manufacturing an enterprise!

In the recent book, "Designing for Digital," Chapter Three, "Building an Operational Backbone," discusses the need to replace the IT legacy of fragmented, disintegrated, very expensive siloes of data and processes. This legacy persists, mostly because that is what IT knows how to do. By the way, the need to replace the IT legacy has been articulated for at least three decades. All this time, however, IT has been producing a lot more legacy at an ever-increasing cost. To be somewhat presumptive, we know how to fix the legacy problem, and the benefits to any enterprise are huge! I refer to the Operational Backbone as the enterprise infrastructure.

Some of the critical indicators of the legacy are:

1. If you create or perpetuate applications' proprietary databases, you are producing more legacy.

2. If you are creating or perpetuating monolithic "black-box" applications that collect and store redundant data, you are producing more legacy.

3. If you are modernizing by re-platforming existing systems without renovating the existing systems and applying new innovations in data and process architecture and design, you are spending a lot of money perpetuating existing legacy systems.

4. If you continue to create system implementations that require data conversions and interfaces, you are producing more legacy.

As of 2022, the underlying problem is Enterprise Architecture has not achieved a universal, standard, generally recognized definition. Furthermore, not much has occurred that establishes how to do Enterprise Architecture.

So, what needs to be done? Why not start with a basic set of words and their meanings and go from there?

Let's start with a discussion and definition of the question, "What is Enterprise Architecture"?

To define Enterprise Architecture, we need to define the concepts and disciplines needed to understand what architecture is and what an enterprise is to understand what Enterprise Architecture is. Understanding the distinctions between Enterprise Architecture and other enterprise-related concepts, principles, practices, and disciplines is also helpful.

> Note: After 30 years of intimate activity regarding Enterprise Architecture as a thought leader and practitioner, I have arrived at a point where I use the Zachman Framework for Enterprise Architecture (ZFEA) as the basic framework for defining Enterprise Architecture; and also as the framework for defining and organizing the Erickson Methodology for Enterprise Architecture. I have found the ZFEA to be the most neutral, comprehensive, and theoretically and empirically sound foundation for architecting, engineering, and manufacturing an enterprise. Therefore, the ZFEA is the anchor point for this definition of Enterprise Architecture and the Erickson Methodology for Enterprise Architecture (EMEA).

Architecture, according to many dictionaries, **"**is the art or science of designing and constructing buildings; a formation or construction as if the result of a conscious act; a unifying or coherent form of method or style of building."

The word "**enterprise**" is problematic as several words, such as company, corporation, partnership, agency, department, division, etc., often refer to an organization engaged in some activity.

One of the more comprehensive, formal definitions is the definition used by the U.S. Department of Commerce.

"An enterprise is an organization, in the public or private sector of the economy, which is formed for the purpose of conducting any organized business activity which produces any products or provides any services either for profit or not for profit."

The following is the definition I have settled on after 30 years or so as I grappled with the concept of "enterprise." I have found this definition to be very useful.

"An enterprise is a collection of resources assembled to provide its product or service to its external market, in and of itself. Further, an enterprise can be formed in the public or private sector of the economy, for the purpose of conducting any organized activity which produces any products or provides any services either for profit or not for profit."

Even this definition needs some explanation.

An enterprise must have authority, governance, and responsibility for performing all activities necessary to produce and provide its products or services. (For brevity purposes, I use the phrase "products" or "services," but by definition, it includes all products or services in a line of products or line of services.)

This definition eliminates the idea that you can create an enterprise architecture for something referred to as a department, division, operation, or any other segmentation of a corporation or company. Enterprise organizational subdivisions cannot provide a product or service to the enterprise's market.

Outsourcing some activities to another enterprise does not mean that those activities are outside the authority of the outsourcing enterprise. Outsourcing the manufacturing of the enterprise product or the Customer Help Desk to another enterprise does not absolve the enterprise of responsibility for the performance of those activities.

Anything less than an "enterprise" architecture will significantly compromise the value and benefit of the enterprise architecture and should not even be considered enterprise architecture. It is critical to recognize that there can only be one enterprise architecture for an enterprise! This means it is a misuse of the enterprise architecture concept if you think it is legitimate to apply it to a department within an enterprise. That is not a valid application of the concept of enterprise architecture. If anything, that would be a "department architecture," resulting in what is an existing siloed IT legacy, an enterprise's potpourri of automated implementations.

The fundamental basis for defining the scope context for any existence of an enterprise is the specification of the "super-objective" of the enterprise.

Every enterprise exists to pursue an economic, political, social, or spiritual objective, or combination thereof. For all practical purposes, every enterprise, in some manner or another, has a "super-objective" to provide some "product or service" to a "market." The market may be well defined and mature or in its infancy. A market may not be formally known as a market but exists only as a latent need or demand.

Examples of enterprise super-objectives are:

1. Engage in the design, manufacture, and distribution of a product or product line (cars, houses, communications equipment),
2. Provide a specified service to persons or other enterprises (healthcare, financial services),
3. Administer a political jurisdiction such as country, state, county, township, or another type of political jurisdiction, or
4. Promote a political or religious philosophy or ideology to some specified group of people in some geographical area or political jurisdiction.

By basing the context of an enterprise on the definition of its products or services, we have a very stable basis on which to define the scope of the enterprise. The context of the enterprise will be stable because as long as its purpose is to provide that product or service to its market, the architectural foundation for the enterprise will not change.

For Enterprise Architecture purposes, it is therefore beneficial to set the boundaries for an enterprise on the definition of the enterprise product or service. The result of this concept is that a corporation may be many enterprises. This situation could be addressed with a variation known as a Federated Enterprise Architecture. However, it may be highly advantageous to share common data (structure and content) between the two enterprises while maintaining the enterprise identity of the data. The nature of the commonality among the enterprises will determine the extent to which the Enterprise Architecture content can be shared among them.

Enterprises, which provide the same product or services, will have essentially the same or very similar enterprise architectures, especially Rows 1-2 of the Zachman Framework for Enterprise Architecture.

The basic principle is that the enterprise product or service will extensively dictate the following:

1. ***business processes the enterprise will perform,***
2. ***data the enterprise requires,***
3. ***human resources skills required,***
4. ***types of facilities they will require, and***
5. ***to some extent, the organizational structure they will use!***

What will distinguish one enterprise from another is "How" it performs one or more of those business processes, and the "How To" is specified in Row 3 of the Zachman Framework for Enterprise Architecture (ZFEA). Row 3 models will have quite a bit of commonality among like enterprises, but that is where they become unique. All enterprises that design and build cars fundamentally perform the same business processes. Some perform some of those business processes more effectively and efficiently than their peers. This concept eliminates

management (or others) who often impose personal preferences that are subject to change every time there is a change in management personnel.

Sometimes, the corporation, in its entirety, is the enterprise. However, sometimes it might be two or more enterprises. General Electric Corporation is more than one enterprise for Enterprise Architecture purposes. General Electric, in its entirety, likely involves more than one corporation because it may wholly own other enterprises that are also corporations.

On the other hand, if the enterprise that designs, builds, and sells cars decides to stop doing that and decides to become a home builder, it will become a different enterprise for Enterprise Architecture purposes because its primary product or service is now different, and the fundamental nature of the enterprise will have changed.

Corporation, company, partnership, trust, sole proprietor, etc., are not names that specify an enterprise; they are forms of organization for an enterprise. An enterprise may start as a sole proprietor, change and become a partnership, and change again to become a corporation. This is a case of the same enterprise changing its form of organization over time. This transformation may cause some additional processes and data to be relevant to the enterprise. Still, the basic scope and content of the enterprise, based on its products and services, will stay very stable. If an enterprise that designs, builds, and sells cars starts up a consumer finance enterprise, there is now a new, second enterprise. An example of this situation is the case where General Motors Corporation started General Motors Credit Corporation. The fact that they were both called corporations is not a factor in determining whether they are one or two enterprises.

Furthermore, it is essential to understand that an enterprise exists only in concept. You cannot see "the enterprise." Yes, we know it exists in some form, but it does not exist in the sense that a car, a house, or a building exists. We can create an enterprise, we can define it, we can design it, and we can create physical objects that represent artifacts of an enterprise. When you look at a building that houses an enterprise's headquarters or home office, you are not looking at the enterprise; you are looking at a building that may or may not even be owned by the enterprise. The enterprise headquarters could be moved to a different building, and the enterprise would still exist as it did before but now resides at a different address. The building exists physically, but the enterprise exists only as a concept. In this case, the building and the enterprise are both independent variables.

This idea also applies to the concept of "organization." The organization does not exist in a physical sense. You can draw me a picture of an organization chart that shows me the positions and their relationships, and you can show me where the manager and the staff sit, but you cannot see a physical thing called an organization. This is the nature of concepts – they exist, they can be described, but they only exist because someone conceived them, defined them, and recognizably described them.

It turns out that it is also very useful to separate the concept of Enterprise Architecture from the participants and roles they play in designing and constructing the enterprise; just as in the building analogy, architecture (meaning building architecture) involves several participants playing a variety of roles in architecting, engineering, designing, and constructing a building.

An **Architect,** as we commonly know them**,** is a person who designs buildings; and in many cases, also supervises the construction of those buildings.

This dual role of the Enterprise Architect is vital to the discipline of Enterprise Architecture. The Enterprise Architect must be intimately involved in the design and manufacture of the enterprise to ensure that the enterprise architecture is not compromised during the engineering and manufacture of the enterprise.

In the building analogy, an Architect (or Architects) designs the building to an excruciating level of detail. Then a builder (General Contractor) takes the Architect's design and builds whatever the architect(s) designed. If the thing to be built is large and complex, several builders (subcontractors) may be involved in the building of the thing the architect(s) designed.

In the Enterprise Architecture realm, the Enterprise Architect designs the enterprise and must supervise the construction of the enterprise from the architect's design to ensure that the integrity of the architectural drawings or models ends up in the physical manifestation of the enterprise. The enterprise engineers (Systems Analysts or Developers, Database Administrators) design the applications and databases using the Enterprise Architects' drawings as their specifications. The General contractor (usually the IT organization) uses various sub-contractors such as programmers, database administrators, technical writers, and application testers who construct, test, and implement the components of the enterprise.

Therefore, Enterprise Architecture "is the art or science of designing and constructing enterprises; a formation or construction as if the result of a conscious act; a unifying or coherent form of method or style of building."

In the context of the ZFEA, the Enterprise Architecture is represented by the artifacts (models) specified in Rows 1-3 of the ZFEA. The artifacts (models) specified in Rows 4 and 5 of the ZFEA are the engineering and manufacturing artifacts produced by the General Contractor in the course of building the enterprise. Again, very importantly, the Row 4 and 5 models cannot compromise the intent and integrity of the Row 3 models.

Accordingly, the word "architecture" in the case of Enterprise Architecture, by definition, includes architecting the enterprise, designing the enterprise, and the construction (design and development of its systems) of the enterprise.

The following paragraph provides a significant analogy describing the existing difference between the approach to building a house and current approaches to IT projects.

When building a house, all participants (carpenters, concrete workers, electricians, plumbers, etc.) participate in building the entire house. The current IT approach to a project does not include the process of architecting the enterprise (as would occur in the case of building a house). Still, it begins with a carving out of a segment of the enterprise (like a room in the house), and all the participants work on that room to the exclusion of all the other rooms in the house. Subsequently, they or a different group of people would build another segment (room) in the enterprise using different methods, different materials, and even different tools, all the while expecting all of the enterprise "rooms" to form a coherent, cohesive, integrated enterprise. Good Luck!

An essential clarification here, which I will address more fully later, is that enterprise architecture is about planning, designing, and building an enterprise and maintaining it throughout its life; it is not about managing the use of the enterprise once it exists. Managing the use of the enterprise once it exists is called management or Enterprise Management – the operators of the enterprise.

Enterprise Architecture is not a program or project that management chooses to implement.

A little historical perspective is in order for those too young to remember. Systems or business systems, or whatever you may call them, existed long before the advent of what we commonly refer to today as information technology.

Information, or its raw material, data, existed before any information technology, much less any automated information technology! The data existed in people's brains. The most ancient information technology was the crude tools and concocted coloring agents created to record data on cave walls, which some claim evolved into tools to inscribe stone tablets. Then it progressed to instruments we might refer to as pens and pencils to record data on paper. Then, in 1440, the printing press was invented, then we got typewriters, and eventually computers. As life and enterprises became more complex, the need to organize increasing complexity evolved the recognition to formalize the processes to be performed to accomplish desired outcomes or output. This resulted in integrating the data with processes for planning and tracking actions to plan as a means to manage our activities. Long before what we refer to as automation came into existence, there was an activity/discipline known as methods and procedure analysis and design. This was manifested in positions whose role was to analyze how activities were to be performed and develop procedure manuals for each process. This was regular enterprise activity into the 1950s and early 1960s. The introduction of computers dramatically impacted how this activity would change. The data analysis and design and process analysis and design activities existed long before the advent of automation technology.   Automation technology was a new tool to enable dramatic improvements in quality and reduction of costs, creating new capabilities in performing previously manual systems and extending human capacity and capability to plan and control enterprises effectively and efficiently.

Enterprise Architecture is fundamental and always present.

The issue is not whether to do Enterprise Architecture or not, but how to do it.

It is not a new program; it is doing what is already being done better, a lot better!

The problem is that in the past, what would be considered Enterprise Architecture efforts were sporadic, fragmented, random, trial-and-error activities. From an Enterprise Architecture point of view, looking at where we have come from, we can view these activities as Applications Architecture at best, NOT Enterprise Architecture.

Over the last 50 years, there have been many ideas, concepts, techniques, and initiatives that, in retrospect, can be seen as efforts that we now can see as attempts at Enterprise Architecture. However, these efforts have almost exclusively addressed what we now recognize as the construction of parts of an enterprise, not a formal, aligned, integrated, flexible, responsive enterprise architecture.

 A short list of these follows.

1. Hierarchical Input Process Output Technique,
2. Structured Programming,
3. Structured Design,
4. Structured Analysis,
5. Non-procedural programming languages,
6. Rapid applications development,
7. Relational modeling,
8. Object-oriented Analysis and Design,
9. Client-Server,
10. Web services,
11. Middleware,
12. Computer-Aided software engineering,
13. Customer Relationship Management,
14. Process Engineering/Re-engineering,
15. Agile methods,
16. Use cases, and
17. Etc., etc., etc.

Each item in the above list represents efforts to address recognized issues or problems to improve the activities performed to provide "systems" that manifest an enterprise's implementation. None of these ideas, concepts, techniques, and initiatives were part of an integrated, coordinated plan for architecting, engineering, and manufacturing the enterprise.

What is being portrayed as Enterprise Architecture today is often traditional practices and evolving technology being repackaged and sold as Enterprise Architecture.

Enterprise management has become convinced they need Enterprise Architecture but don't know much about it. This is yet another situation that is ripe for the selling of another "silver bullet" solution. It is not the acquisition and implementation of new technology. It is

developing the capability to architect the enterprise, design the enterprise (engineer the enterprise using the architectural drawing) and construct the enterprise (transform the architectural drawing and engineering designs into physical manifestations of the enterprise) that implement an improved and continuously improving enterprise.

1.2 Enterprise Architecture versus Enterprise Management

Enterprise Architecture is the ***science*** of designing and constructing enterprises, a formation or construction as if the result of a conscious act, a unifying or coherent form of method or style of building.

> Note: Some might say that Enterprise Architecture is more of an art than a science. I have to disagree! Enterprise Architecture is more a science than an art and is becoming more of a science. Art is heavily influenced by the artists and their perceptions and preferences. Enterprise Architecture is increasingly achieved by applying, what John A. Zachman says, are the "physics of enterprise architecture" and less and less by personal perceptions and preferences.

Enterprise Architecture is about planning, designing, and building an efficient and effective enterprise and maintaining it throughout its life; it is not about managing the use of the enterprise once it exists.

Enterprise Management is the actions taken by people with the responsibility and authority to operate the enterprise. Enterprise Management plans, staffs, organizes, directs, and controls the operation of the enterprise. *The primary role of enterprise management is to operate the enterprise!*

Managing the use of the enterprise once it exists is called Enterprise Management. Good Enterprise Management is a prerequisite to operating an enterprise efficiently and effectively.

General Management, be it the owner, partners, or corporate leadership, establishes the primary purpose of the enterprise…. to provide a product or service to its market.

The role of Enterprise Architecture is to architect and construct an enterprise capable of efficiently and effectively providing the product or service to the market. Various notable management experts have specified the role of enterprise management is to plan, organize, staff, direct, and control the operation of an enterprise.

One of the areas of confusion about what Enterprise Architecture is and what Enterprise Management is, arises from the myriad of management concepts, principles, and techniques that have been proposed as the panacea for correcting the ills of an enterprise or for positioning the enterprise to thrive in today's world. The list of these is long and will get longer. A few of these that have achieved some degree of acceptance at one time or another are:

1. Management by Objectives (MBO)

2. Management by Walking Around (MBWA)
3. Zero-Based Budgeting
4. Quality Circles
5. Participative Management
6. Total Quality Management (TQM)
7. Six Sigma Quality
8. Decentralization
9. Responsibility Accounting
10. Just-In-Time Inventory Management
11. Customer Relationship Management (CRM)
12. Balanced Scorecard (BSC)
13. Enterprise Resource Planning (ERP)
14. Business Process Re-engineering

You will notice no mention of Enterprise Architecture in this group. The items in the above list are management techniques. They are not Enterprise Architecture techniques. Every one of the items on the above list could be applied to the function of Data Processing Management, Information Systems Management, or Information Technology Management, as well as to any other functional area of the business.

However, an Enterprise Architect's capability, knowledge, understanding, and application of these management concepts, principles, and techniques are critical. One of my favorite examples from this list is "decentralization." If management starts out promoting centralized management, beware. They can easily decide to change to decentralized management in the future. A capable Enterprise Architect will recognize that architecting for one or the other is a recipe for causing future change. This would be a case where it is highly recommended that you architect, engineer, and manufacture for both cases; or in Enterprise Architecture language, we call it "designing for change." It is much less expensive and provides maximum flexibility (which also dramatically reduces the time to adapt) for management when making these decisions. ***An Enterprise Architect's fundamental capability is understanding how things can change in an enterprise.***

Enterprise Architecture is not typically recognized as a function within enterprises. From an enterprise perspective, Engineering, Manufacturing, Finance, Accounting, Actuary, Claims Processing, and Power Generation are examples of enterprise functions. Currently, most enterprises have a function called Information Technology. Some might suggest that the Chief Information Officer (CIO) role represents the function that embodies Enterprise Architecture. I assert that in most cases where there is an activity assigned the name Enterprise Architect, I am pretty sure that activity typically has little to no role in the direction of the broader responsibilities of the CIO.

All these functions collectively are "managed" by enterprise management. However, each of these functions has its management – management, and staff who are expected or should be expected to provide their unique expertise to optimize the performance of their function as a part of the whole enterprise. At lower levels of management in all functional areas, the scope or focus of management narrows to their assigned area of responsibility. As of the publication

of our book, "Erickson Methodology for Enterprise Architecture," I know of no enterprise with an Enterprise Architecture function. Yes, they have people who have job titles that include the word "architect." Still, I have not seen a situation where any of those people are responsible for architecting the enterprise. Please let me know when you find one.

Consequently, we are currently in a situation where there is very little responsibility and accountability for the architecture of the enterprise, much less there being a capability to do enterprise architecture. By the way, it does not do much good to ask Enterprise Management how they think or want the enterprise architecture to be done or look like when results are produced. Notwithstanding this state of affairs, every enterprise has an enterprise architecture – it might be good, or not so good. How would you know if it was good or not so good if you did not know about or have expertise and experience in the science of enterprise architecture?

This state of affairs is a significant reason I advocate for recognizing and establishing an enterprise function called Enterprise Architecture Services. This function would be established to be the function capable of providing the enterprise architecture services to the enterprise, along with the functional capability to not only architect the enterprise; but also to engineer and manufacture the enterprise… an actual enterprise architecture service, not only an information systems project development and implementation shop.
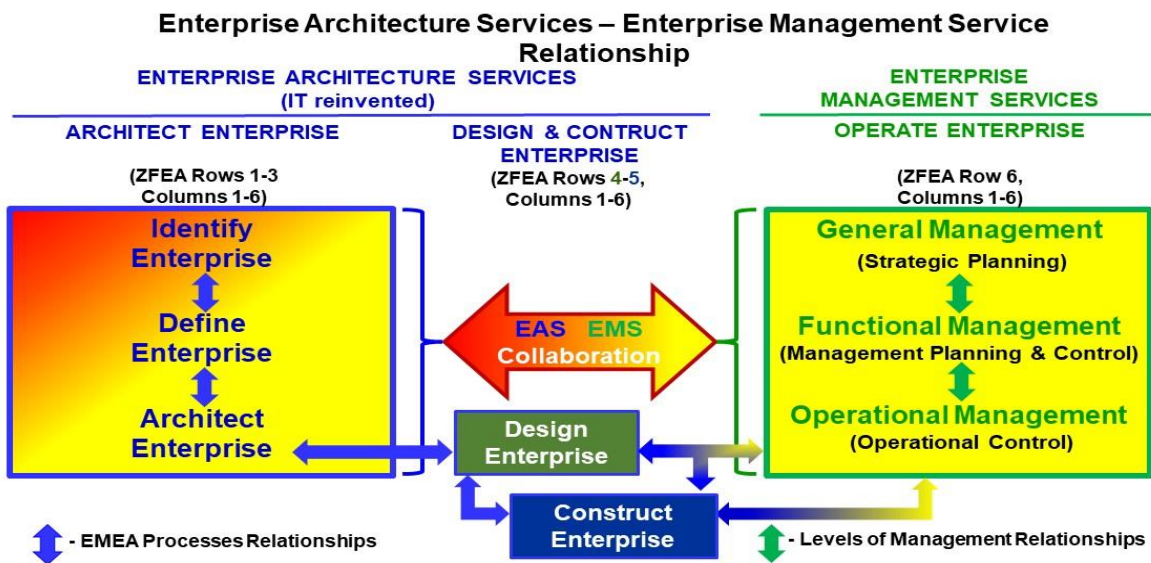
Enterprise management and the enterprise are two independent variables. This means that one can be changed without changing the other one. You can have a change in enterprise management without changing the architecture of the enterprise. It is like doing an excellent job of architecting, designing, and building highways so they can be used by a variety of vehicles carrying various people and goods without having to change or rebuild the highway!

The question often arises regarding who is responsible for Enterprise Architecture – Enterprise Management or Information Technology. General Management (the highest management level) of the enterprise is ultimately responsible for ensuring that there is an Enterprise

Architecture function and that it is as capable as any other functions performed for the enterprise. Just as General Management does not perform Marketing, Sales, Engineering, or Manufacturing, it would not perform the Enterprise Architecture function, mostly because it is a distinct discipline not mainly considered a management discipline.

Enterprise Management makes decisions regarding goals, strategies, plans, allocation of resources, and directing the use of those resources in the operation of the enterprise. For example, enterprise management may decide they want to:

1. Adopt Zero-Based Budgeting as the way to prepare their annual budgets. This decision will not change the fact that there is a budgeting process, but it will probably mean a change in the way the budgeting process is performed.

2. Pay employees using direct deposit instead of using physical checks. This decision will not change much of the "Pay Employees" process except for the part that issues the payment by adding the capability to make direct deposits to employees' bank accounts. That part of the Pay Employees process that calculates the gross and net pay would not be affected.

3. Change the logic of calculating insurance policy premiums which would cause a change in the details of the process that calculates premiums.

4. Develop and market a significantly different kind of product or service, such as an automobile design and manufacturing enterprise deciding to develop, design, and build housing developments would cause a new enterprise and enterprise architecture to be created.

If the implemented enterprise architecture is integrated, flexible, and designed for change, enterprise management can make many decisions that will not cause a change (or at least minimize the impact) on the enterprise architecture.

On the other hand, if Enterprise Management decides to change the existing product or service to another product or service, the Enterprise Architecture will be significantly different.

In conclusion:

Application Architecture without Enterprise Architecture results in more legacy applications! (Redundancy, gaps, expensive enhancements, and maintenance.)

Data Architecture without Enterprise Architecture results in more legacy data! (Fragmented, redundant, very expensive, incomplete siloes of data.)

Technology Architecture without Enterprise Architecture results in more legacy technology! (Fragmented, redundant, and expensive.)

Co-opting the label "Enterprise Architecture" or "Enterprise Architect" for any use or purpose other than to apply it to the Enterprise Architecture body of knowledge and expertise is a willful corruption of the concept, body of knowledge, and expertise known as Enterprise Architecture.