

Enterprise Architecture Methodologies and Comparisons

1. The Zachman Framework for Enterprise Architectures

The first thing we need to understand about the Zachman Framework is that it isn't a framework. The Zachman "Framework" is actually a taxonomy for organizing architectural artifacts (in other words, design documents, specifications, and models) that takes into account both who the artifact targets (for example, business owner and builder) and what particular issue (for example, data and functionality) is being addressed.

For Example, from the business owner's perspective, "data" means business entities. This can include information about the entities themselves, such as customers and products, or information about relationships between those entities, such as demographic groups and inventories. If you are talking to a business owner about data, this is the language you should use.

From the perspective of the person implementing the database, "data" does not mean business entities, but rows and columns organized into tables and linked together by mathematical joins and projections. If you are talking to a database designer about data, don't talk about customer demographic groups, but talk about third-normal relational tables.

2. The Open Group Architecture Framework (TOGAF)

TOGAF describes itself as a "framework," but the most important part of TOGAF is the Architecture Development Method, better known as ADM. ADM is a recipe for creating architecture. A recipe can be categorized as a *process*. Given that ADM is the most visible part of TOGAF, it can be categorized overall as an *architectural process*, instead of either an *architectural framework* (as The Open Group describes TOGAF) or a *methodology* (as it describes ADM).

Viewed as an architectural process, TOGAF complements Zachman—categorized as an architectural taxonomy. Zachman tells you how to categorize your artifacts. TOGAF gives you a process for creating them.

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Phase: Prelim.

Framework
and
Principles



Phase: A
Architecture
Vision



Phase: B
Business
Architecture



Phase: C
Information
Systems
Architectures



Phase: D
Technology
Architecture



Phase: E
Opportunities
and
Solutions

Phase: F
Migration
Planning

Phase: G
Implementation
Governance

Phase: H
Architecture
Change
Management



The TOGAF Architecture Development Method (ADM)

TOGAF divides an enterprise architecture into four categories, as follows:

1. Business architecture—Describes the processes the business uses to meet its goals
2. Application architecture—Describes how specific applications are designed and how they interact with each other
3. Data architecture—Describes how the enterprise datastores are organized and accessed
4. Technical architecture—Describes the hardware and software infrastructure that supports applications and their interactions

3. Federal Enterprise Architecture (FEA)

FEA has both a comprehensive taxonomy, like Zachman, and an architectural process, like TOGAF. FEA can be viewed as either a methodology (taxonomy, FEA process, and FEA reference model) for creating an enterprise architecture or the result of applying that process to a particular enterprise—namely, the U.S. Government.

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Suppose the Internal Revenue Service (IRS) decides it needs a demographics system to track taxpayer data. They ask around to see if anybody has one they can modify for their purposes. Nobody does.

Little do they know that, right next door, the Government Printing Office (GPO) has a perfectly good demographics system that is almost exactly what the IRS needs. They just happen to call it a customer-analytics system.

So, the IRS goes out and builds its system from scratch, instead of just modifying the one already built (and paid for) by the GPO. And, in doing so, the IRS will waste considerably more money.

This, in a nutshell, is the goal of the five FEA reference models: to give standard terms and definitions for the domains of enterprise architecture and, thereby, facilitate collaboration and sharing across the federal government. The five reference models (as in TOGAF categories) are as follows:

1. **The Business Reference Model (BRM)** gives a business view of the various functions of the federal government. For example, the BRM defines a standard business capability called water resource management that is a subfunction of natural resources that is considered a line-of-business of the broader services for citizens business area. [29]
2. **The Components Reference Model (CRM)** gives a more IT view of systems that can support business functionality. For example, the CRM defines a customer-analytics system that is a hypothetical interchange between the IRS and the GPO. [30]
3. **The Technical Reference Model (TRM)** defines the various technologies and standards that can be used in building IT systems. For example, the TRM defines HTTP as a protocol that is a subset of a service transport that is a subset of service access and delivery. [31]

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4. **The Data Reference Model (DRM)** defines standard ways of describing data. For example, the DRM defines an entity as something that contains attributes and participates in relationships. [32]
5. **The Performance Reference Model (PRM)** defines standard ways of describing the value delivered by enterprise architectures. For example, the PRM describes quality as a technology measurement area that is defined as "the extent to which technology satisfies functionality or capability requirements." [33]

The FEA Process as in TOGAF-ADM, includes:

- **Step 1: Architectural Analysis**—Define a simple and concise vision for the segment, and relate it back to the organizational plan.
- **Step 2: Architectural Definition**—Define the desired architectural state of the segment, document the performance goals, consider design alternatives, and develop an enterprise architecture for the segment, including business, data, services, and technology architectures.
- **Step 3: Investment and Funding Strategy**—Consider how the project will be funded.
- **Step 4: Program-Management Plan and Execute Projects**—Create a plan for managing and executing the project, including milestones and performance measures that will assess project success.

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4. Gartner

Is not a taxonomy (like Zachman), a process (like TOGAF), or a complete methodology (like FEA). Instead, it is a practice. It is the enterprise-architecture practice of one of the best known IT research and consulting organizations in the world: Gartner

You don't bring in Gartner because they do or don't use TOGAF. You don't go to Gartner because they do or don't follow Zachman's taxonomy. You go to Gartner because they are well-known in their field. You assume both that they hire well-qualified specialists and that they have developed a community that encourages collaboration and best practice.

For example, an analogy would be: One approach to choosing a physician is to go to a well-known institution (a hospital or medical school) and choose from among their staff. In this approach, you are counting on the institution to choose highly qualified physicians and to have developed a community that encourages collaboration and best practices.

Gartner believes that enterprise architecture is about bringing together three constituents: business owners, information specialists, the technology implementers. If you can bring these three groups together and unify them behind a common vision that drives business value, you have succeeded; if not, you have failed. Success is measured in pragmatic terms, such as driving profitability, not by checking off items on a process matrix.

Gartner recommends that an organization begin by telling the story of where its strategic direction is heading and what the business drivers are to which it is responding. Gartner will want this story in plain language, without worrying about prescribed documentation standards, acronyms, or technobabble. The only goal is making sure that everybody understands and shares a single vision.

As soon as an organization has this single shared vision of the future, it can consider the implications of this vision on the business, technical,

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information, and solutions architectures of the enterprise. The shared vision of the future will dictate changes in all of these architectures, assign priorities to those changes, and keep those changes grounded in business value.

Comparing and evaluating enterprise-architectural methodologies

	<i>Zachman</i>	<i>TOGAF</i>	<i>FEA</i>	<i>Gartner</i>
<p><i>Taxonomy completeness</i> (refers to how well you can use the methodology to classify the various architectural artifacts)</p>	4	2	2	1
<p><i>Process completeness</i> (refers to how fully the methodology guides you through a step-by-step process for creating an enterprise architecture)</p>	1	4	2	3
<p><i>Reference-model guidance</i> (refers to how useful the methodology is in helping you build a relevant set of reference models)</p>	1	3	4	1
<p><i>Practice guidance</i> (refers to how much the methodology helps you assimilate the mindset of enterprise architecture into your organization and develop a culture in which it is valued and used)</p>	1	2	2	4
<p><i>Maturity model</i> (refers to how much guidance the methodology gives you in assessing the</p>	1	1	3	2

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effectiveness and maturity of different organizations within your enterprise in using enterprise architecture)				
Business focus (refers to whether the methodology will focus on using technology to drive business value, in which business value is specifically defined as either reduced expenses and/or increased income)	1	2	1	4
Governance guidance (refers to how much help the methodology will be in understanding and creating an effective governance model for enterprise architecture)	1	2	2	3
Partitioning guidance (refers to how well the methodology will guide you into effective autonomous partitions of the enterprise, which is an important approach to managing complexity)	1	2	4	3
Prescriptive catalog (refers to how well the methodology guides you in setting up a catalogue of architectural assets that can be reused in future activities)	1	2	4	2
Vendor neutrality (refers to how likely you are to get locked-in to a specific consulting organization by adopting this methodology. A high rating here indicates low vendor lock-in)	2	4	3	1

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Information availability (refers to the amount and quality of free or inexpensive information about this methodology)	2	4	2	1
Time to value (refers to the length of time you will likely be using this methodology before you start using it to build solutions that deliver high business value)	1	3	1	4

SCALE==>	5 = High
	4 = Middle to High
	3 = Middle
	2 = Low to Middle
	1 = Low

Recommendation

One of the important points of “**Comparing and evaluating enterprise-architectural methodologies**” represented in Table above is that none of the enterprise-architecture methodologies is really complete. Each has its strengths and weaknesses.

How do you choose which methodology is best for you?

1. Go through the rows (criteria) in Table above, eliminating any that you feel are not important to your organization.
2. Add any additional rows (criteria) that you feel are important, and rate each of the methodologies in that area.
3. Change any of the ratings with which you disagree.

At the end of this exercise, you should have a good idea about the strengths and weaknesses of each methodology with respect to your enterprise's

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needs. If a clear winner emerges, count yourself lucky. Find a consultant who specializes in helping enterprises implement that methodology, and go for it.

For many organizations, there will be no clear winner. For such organizations, it is recommend you use a blended approach, in which you create your own enterprise-architectural methodology consisting of bits and pieces of each of the methodologies that provide the highest value in your specific areas of concern.

You will want a different kind of consultant—one who has a broad perspective of all of these methodologies and specializes in helping enterprises create a methodology that works best, given the specific needs and political realities of that enterprise.

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