

An Oracle White Paper in Enterprise Architecture
October 2009

The Oracle Enterprise Architecture Framework

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Executive Overview

The Oracle Enterprise Architecture Framework helps Oracle to collaboratively work with customers in developing strategic roadmaps and architecture solutions that enable business and IT alignment. Oracle emphasizes a “just enough” and “just in time” practical approach to Enterprise Architecture, which may be used standalone or as a complement a customer’s selected EA methodology. By focusing on business results and leveraging Oracle’s unique EA assets and reference architectures, the Oracle Enterprise Architecture Framework can be employed to efficiently create architecture roadmaps for implementing business-driven enterprise solutions.

Introduction

In the early days of computing, technology simply automated manual processes with greater efficiency. As technology evolved, new innovations enabled new capabilities and processes in the enterprise that were driven by IT. Gradually, IT changed the business but not necessarily in alignment with the business strategy. This lack of alignment resulted in significant waste of resources and missed opportunities, and placed the organization in a competitive disadvantage in the market.

To align the strategies of business with IT, a new approach for managing IT has been developed called Enterprise Architecture. Just as architecture provides a blueprint for constructing a building, Enterprise Architecture provides a blueprint and roadmap for aligning business strategy with IT

“The real value of Enterprise Architecture is not in making better architectures...it’s in making better enterprise.”

Gary Doucet, **Chief Architect,**

Government of Canada Treasury Board of Canada Secretariat GC

Enterprise Architecture

Enterprise Architecture (EA) is a method and an organizing principle that aligns functional business objectives and strategies with an IT strategy and execution plan. The Enterprise Architecture provides a guide to direct the evolution and transformation of enterprises with technology. This in turn makes IT a more strategic asset for successfully implementing a modern business strategy.

An Enterprise Architecture typically produces deliverables such as:

- Current State Enterprise Architecture model
- Future State Enterprise Architecture reference model that is needed to execute on the proposed business strategy
- Gap analysis that identifies the shortfalls of the current state in terms of its ability to support the objectives and strategies of the business
- Architecture Roadmap that defines the initiatives required to migrate from the current state into the future state.

By taking an enterprise-wide perspective across business services, business processes, information, applications, and technology, an EA ensures the enterprise goals and objectives are addressed in a holistic way across all IT projects.

To be successful, an Enterprise Architecture needs to be woven into the enterprise's culture, not treated as a closed-scope project. The value of an EA is greatly enhanced when it is organically embedded into the lifecycle of the organization, including capital planning, project management, asset management, resource allocation, and strategy formulation.

Enterprise Architecture is a journey, not a project. It evolves over time and needs to maintain the flexibility required to adjust to changing market conditions, strategy shifts, and new innovations in technology. EA frameworks have emerged to manage the increasingly complexity of innovation and change.

Enterprise Architecture is as much about ongoing communications among business and IT leadership as it is about technology innovations and architectural choices. Enterprise Architecture facilitates business and IT communication with common language, process, and structure.

Enterprise Architecture Frameworks

Creating an Enterprise Architecture from scratch can be a daunting task, so EA frameworks were created to simplify the process and guide an architect through all areas of architecture development. An Enterprise Architecture framework provides a collection of best practices, standards, tools, processes, and templates to assist in the creation of the Enterprise Architecture and architectures of various scopes.

Enterprise Architecture frameworks typically include:

- Common vocabulary, models, and taxonomy
- Processes, principles, strategies and tools
- Reference architectures and models
- Prescriptive guidance (EA processes, architecture content, implementation roadmap, governance)
- Catalog of architecture deliverables and artifacts
- Enterprise Architecture Content Metamodel
- Recommended set of products and configurations (optional)

Utilizing an Enterprise Architecture framework streamlines the process for creating and maintaining architectures at all levels (e.g. enterprise architectures, functional business segment architectures, cross-cutting technology domain architectures, and solution architectures) and enables an organization to leverage the value of architecture best practices.

A number of EA frameworks exist in the industry with the goal of addressing the basic challenge of assessing, aligning, and organizing business objectives with technical requirements and strategies. Examples include the Zachman Enterprise Framework, The Open Group Architecture Framework (TOGAF), OMB Federal Enterprise Architecture (FEA), and The Gartner Methodology (formerly the Meta Framework).

Each framework possesses different strengths and weaknesses, which makes it difficult to find any one existing framework that is ideal for all situations. The following chart depicts how four Enterprise Architecture Frameworks compare.

Criteria	Zachman	TOGAF	FEA	Gartner
Taxonomy Completeness	4	2	2	1
Process Completeness	1	4	2	3
Reference Model Guidance	1	3	4	1
Practice Guidance	1	2	2	4
Maturity Model	1	1	3	2
Business Focus	1	2	1	4
Governance Guidance	1	2	3	3
Partitioning Guidance	1	2	4	3
Prescriptive Catalog	1	2	4	2
Vendor Neutrality	2	4	3	1
Information Availability	2	4	2	1
Time to Value	1	3	1	4

Rating Scale:
1. Very Poor
2. Inadequate
3. Acceptable
4. Very Good

Source:
Comparison of the Top Four Enterprise Architecture Methodologies
by Roger Sessions, CTO of ObjectWatch

Figure 1. Industry Frameworks.

The Oracle Enterprise Architecture Framework

In an effort to provide an efficient, business-driven framework to help our customers align their IT and business strategies, Oracle created a hybrid EA framework, influenced by TOGAF, FEA and Gartner. This simple yet practical and prescriptive framework is called the Oracle Enterprise Architecture Framework (OEAF). The OEAF is complementary to other EA frameworks, with clear mappings to TOGAF and FEA, such that customers can use the EA framework of their choice. The intent of building the OEAF was to leverage the strengths of the different industry frameworks and marry that with Oracle’s experience in developing enterprise solutions.

The central theme of the Oracle Enterprise Application Framework is to provide “just enough” structure, which can be created “just in time” to meet the business requirements of the organization. In addition, the OEAF provides a well-known architectural structure for sharing Oracle’s vast intellectual capital around enterprise IT solutions with its customers and partners, thereby, further enhancing Oracle’s strategic business value proposition.

The Oracle Enterprise Application Framework encompasses nine key values.

- Driven by business strategy
- Standardizes and simplifies the technical architecture
- Comprises “just enough” modeling for enterprise solution architecture efforts
- Reuses best practice business models and reference architectures from industry and commercial vendors
- Focuses initially on speed of delivery for high level guidance

- Developed collaboratively with business owners, stakeholders, and skilled architects
- Developed iteratively and matures evolutionarily for breadth and depth
- Can be enforced
- Technology agnostic but leverages Oracle expertise and IP

These principles provide the foundation for agile enterprise architecture capabilities in mapping business requirements to IT implementation.

Our best-of-breed approach overcomes many of the complexities and unnecessary rigid structures associated with other frameworks. The OEAF is designed to provide quick, incremental results. Each process and artifact has been carefully analyzed to reduce waste and provide the appropriate level of detail required to meet the objectives of the business. The OEAF avoids time consuming waterfall processes and allows multiple components to be developed in parallel.

To further increase the value of OEAF, Oracle also tailors prebuilt reference architectures that define future state architectures. These proven reference architectures drill down from logical components (for example, functional capabilities) to physical components (for example, Oracle technologies and products) that complement a customer's existing environment and can be used to minimize implementation risks.

Components of the Oracle Enterprise Architecture Framework

The Oracle Enterprise Architecture Framework consists of seven core components.

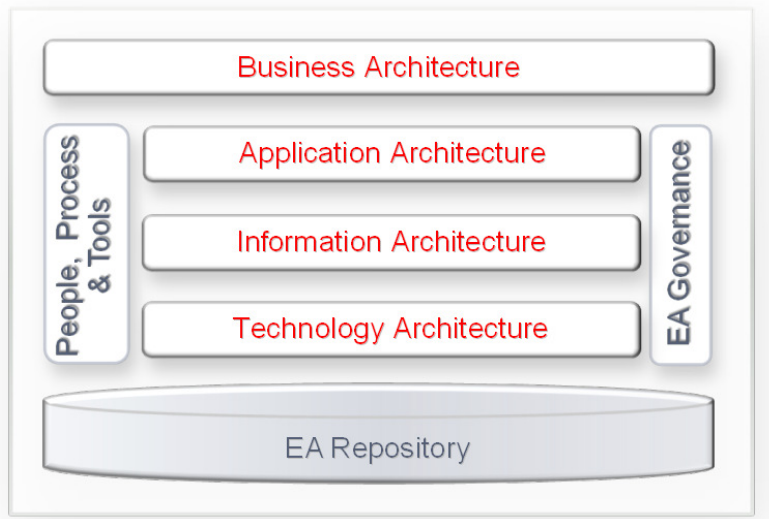


Figure 2. Oracle Enterprise Architecture Framework Components

Business Architecture

Any architectural discussion should begin with Business Architecture. The Business Architecture aligns an organization's operating model, strategies, and objectives with IT; it also creates a business case for IT transformations and provides a business-centric view of the enterprise from a functional perspective.

This part of the framework provides the following three key areas of information about the business:

- **Business Strategy:** Key business requirements, objectives, strategies, key performance indicators, business risks, and the business-operating model (how processes and systems are centralized versus decentralized across the business).
- **Business Function:** The key business services, processes, and capabilities that will be affected by the enterprise architecture effort.
- **Business Organization:** The high-level nature of the organizational structures, business roles (internal audiences, external customers and partners), the decision-making process, and the organizational budget information.

Application Architecture

The Application Architecture provides an application- and services-centric view of an organization that ties business functions and services to application processes and services to application components in alignment with the application strategy. The Application Architecture's scope, strategy, standards are a consequence of the Business Architecture.

The Application Architecture is composed of the following content categories:

- **Application Strategy:** The key application architecture principles (Build versus Buy, Hosted versus In-House, Open Standards versus .NET, etc.), application governance and portfolio management, and a set of reference application architectures relevant to the customer.
- **Application Services:** An inventory of the key application services exposed to internal and external audiences that support the business services.
- **Application Processes:** A series of application-specific processes that support the business processes in the Business Architecture.
- **Logical Components:** An inventory of the relevant product-agnostic enterprise application systems that is relevant to the stated business objectives.
- **Physical Components:** The actual products that support the logical application components and their relationships to the relevant components and services in the information and technology architectures.

Information Architecture

The Information Architecture describes all of the moving pieces and parts for managing information across the enterprise, and the sharing of that information to the right people at the right time to realize the business objectives stated in the business architecture.

The key components for describing the information architecture are:

- **Information Strategy:** The information architecture principles, information governance and compliance requirements, canonical data models, and industry data model support strategy and a set of reference information exchange as well as dissemination patterns and reference models.
- **Information Assets:** A catalog of critical business data types and models (such as customer profile, purchase order, product data, supply chain, etc.) and the relationships between those business data types and all the services and processes that interact with that data.

The Information Architecture provides an information- and data-centric view of an organization, focusing on key information assets that are used to support critical business functions.

Technology Architecture

The Technology Architecture describes how the infrastructure underlying the business, application, and information architectures is organized. The key components are:

- **Technology Strategy:** The technology architecture principles, technology asset governance and portfolio management strategy, and technology standards, patterns, and reference architectures used for developing specific technology solutions.
- **Technology Services:** An inventory of the specific technology services and their relationships and the business services, application services, information assets and logical or physical technology components that realize those services.
- **Logical Components:** The product-agnostic components that exist at the technology infrastructure tier to support each technology service.
- **Physical Components:** The set of technology products that exists behind each of the logical technology components to implement the technology service.

The Technology Architecture provides a technical reference model, as documented in Oracle's Enterprise Software Framework (ESF), that is used to align technology purchases, infrastructure, and solution implementations with the enterprise IT strategies, architecture principles, standards, reference architectures, and governance model.

People, Process, and Tools

This area of the framework identifies the people, processes, and tools used to define enterprise architectures and architecture solutions.

- **People:** Teams and individuals who are chartered with enterprise architecture responsibilities from several perspectives—architecture development, maintenance, implementation, and governance.
- **Process:** A selection and adherence to a set of architectural processes that are tailored to guide an architecture engagement through a path that maximizes the chance of a successful implementation and minimizing resource expenditure. The next section describes several applied processes offered by the OEAF.
- **Tools:** A set of tools and technologies that accelerate the process of developing and managing enterprise architecture. Most of these tools fall under the category of modeling (for example, ARIS IT Architect, Oracle BPA Suite), portfolio management (for example, Oracle Primavera), and architecture asset repositories (for example, Oracle Enterprise Repository).

Enterprise Architecture Governance

Enterprise Architecture governance provides the structure and processes for implementing an organization's business strategy and objectives through an Enterprise Architecture. An EA governance body is used to guide each project and ensure its alignment with the EA during IT transformations and solution implementations. Successful EA governance includes:

- **People:** Teams, individuals, roles, and responsibilities of the governance board(s)
- **Processes and Policies:** Architecture lifecycle management, change management, review cycles, etc.
- **Technology:** Infrastructure for implementing the processes and policies of enterprise architecture governance
- **Financial:** IT cost allocation, project-funding models, business case tools to continuously monitor a positive return on investment, etc.

EA Repository

The EA Repository is an Oracle internal repository for all the architecture artifacts and deliverables that are captured and developed throughout the lifecycle of an Enterprise Architecture. The purpose of this repository is to provide information describing the current-state architecture and a library of reference architectures, models, and principles that describes the target desired state of the architecture, given the business objectives. This includes Oracle EA intellectual property for jumpstarting customer EA initiatives and architecting enterprise solutions.

The Oracle Architecture Development Process

To create these Enterprise Architecture components, Oracle has created a streamlined process to facilitate their development. The Oracle Architecture Development Process (OADP) defines a practical approach for working with customers collaboratively to align their enterprise and solution architectures to their business strategies and goals.

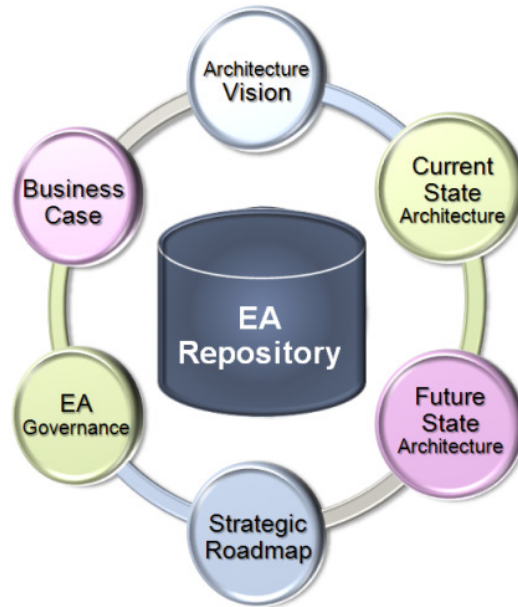


Figure 3. Oracle Architecture Development Process

The OADP provides a generic, base process for developing architectures as part of the Oracle Enterprise Architecture Framework. The OADP contains the following components:

- **Six High-level Phases:** Architecture Vision, Current State Architecture, Future State Architecture, Strategic Roadmap, EA Governance, and Business Case. Oracle's approach enables many of these phases to be run concurrently to reduce the time associated with creating architectures of various scopes. Also, the OADP is meant to be a highly iterative process because architectures are developed and refined with feedback.
- **Tasks:** Performed in each phase and any prescriptive guidance for performing the task in a practical and most efficient manner that leverages Oracle's EA Repository (of reusable architecture artifacts).
- **Deliverables Created in Each Phase:** Generally one consumable PowerPoint document that summarizes the results of each task and references all artifacts produced in each phase.

- **Artifacts Created in Each Phase:** Individual models and diagrams; the simplified documentation approach provides just enough detail without requiring excessive overhead associated with documentation.

From the base OADP process, Oracle creates tailored OADP processes that target a specific segment, domain, and/or solution architecture such as Application Portfolio Rationalization and IT Optimization. These tailored OADP processes use the basic structure and phases of the base OADP process; however, they are further streamlined by emphasizing the critical path for a given architecture engagement, and by providing prescriptive guidance, case studies, sample artifacts, applicable reference models, etc. for executing these critical tasks and creating key artifacts.

Summary: Value & Benefits

The Oracle Enterprise Application Framework provides significant value to an organization, including:

- Continuous alignment of business and IT
- Improved Return on Investment (ROI) through better execution of the business strategy using IT, and more efficient reuse of IT resources
- Leveraging technology to create new business strategies
- Using a single framework to combine products, services, and architectures around all technology

As an architect, the OEAF provides a number of key benefits.

- The framework's practical approach allows the architects to focus on the architecture and not be bogged down with excessive processes and artifacts, or creating their own processes.
- The agile nature of the OEAF enables continuous improvements to adapt to changing business conditions and new technologies.
- The OEAF uses industry EA concepts and terminology and leverages the best of other frameworks.
- Access to a set of best practices, tool sets, reference architectures, and tailored architecture processes around specific problems (applications rationalization, IT optimization, and more.) will significantly reduce the time required to develop enterprise-level architectures.

A Case Study

A large medical device provider in the United States recently used the Oracle Enterprise Architecture Framework to successfully create an Enterprise Architecture to facilitate their aggressive business strategy. The customer was looking to perform a major overhaul of its Enterprise Architecture that was driven by two major business objectives: (1) develop a highly aggressive, 10-year plan to grow revenue ten-fold; and (2) eliminate all major process inefficiencies in its business to increase margins year over year. The customer employs over 1,700 employees and enjoys nearly US\$500 million annual sales. This level of change and growth would require a well thought out strategy and execution plan.

According to the senior management, the key challenge facing the enterprise was a major misalignment between the current IT strategy and infrastructure, and the business plan they defined to achieve their growth plan. In addition, management was skeptical of the quality and execution efficiency of their information systems and processes, which they felt were a permanent drain on operating margin. However, management was ambivalent on the exact nature of the root causes of their IT misalignment and inefficiencies; therefore, they resisted making drastic changes to their infrastructure, fearing it would risk their daily business operations. As a result, the firm engaged the Oracle Enterprise Architecture team to help them devise a systematic method for identifying the key areas needing improvement, and providing a risk-neutral, phased roadmap for changing their IT operations to support the firm's business objectives and strategies.

This scenario was a prime candidate for applying the OEAF. The customer was not ideologically or culturally aligned to any existing frameworks (like TOGAF or Zachman), but was primarily oriented toward implementation success of their two strategic objectives.

Using the OEAF, Oracle Enterprise Architects, started by using the ARIS IT Architect toolset to illustrate the current-state architecture to the relevant executive stakeholders. By visually depicting all of the enterprise's moving parts in a common language shared by the business and the technical audiences, the customer could see the misalignment, redundancy, and inefficient resource usage problems for themselves. In this specific scenario, the customer was able to see that some of their key misalignments and inefficiencies were a by-product of not having a standard service oriented architecture (SOA) platform.

One of the key benefits the firm realized was the framework's ability to align their strategies with their current state of redundant and missing processes. With this information as a foundation both business and IT were able to understand the IT impacts of business requirements and vice versa. As a result, the firm was able to create a prioritized business process roadmap with aligned IT budget and resource implications. An important benefit of the process was that the alignment increased the trust between the business units and IT.

Conclusion

The Oracle Enterprise Architecture Framework helps Oracle to collaboratively work with customers in developing strategic roadmaps and architecture solutions that enable business and IT alignment. Oracle emphasizes a “just enough” and “just in time” practical approach to Enterprise Architecture, which may be used standalone or as a complement a customer’s selected EA methodology. By focusing on business results and leveraging Oracle’s unique EA assets and reference architectures, the Oracle Enterprise Architecture Framework can be employed to efficiently create architecture roadmaps for implementing business-driven enterprise solutions.



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