

An Oracle White Paper in Enterprise Architecture
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Oracle Architecture Development Process: The Art of Realizing Your Future State Architecture

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Executive Overview	1
Introduction	1
Value of an Architecture Development Process.....	3
Structure Versus Flexibility	4
Oracle Architecture Development Process	5
Architecture Vision.....	6
Current State Architecture	7
Future State Architecture.....	8
Strategic Roadmap.....	8
EA Governance.....	9
Business Case	10
OADP and the OEAF.....	11
Applied OADP	13
Conclusion	14

Executive Overview

The Oracle Architecture Development Process is an agile and streamlined method focused on creating future state architectures for information-driven organizations. It was developed using an agile architecture mindset where all activities and process steps were oriented towards delivering business value quickly and repeatedly. OADP acts as an enabler for change management programs that are focused on aligning business operations and infrastructure (i.e. people, process and technology) with the business mission and strategy. The OADP is a highly iterative and adaptive process that can be applied to develop future state architectures for individual functional segments in the business (e.g. supply chain, product lifecycle management, sales and marketing) or to enterprise architecture domains (business, applications, technology infrastructure, information, governance). The purpose of taking an agile approach to architecture is to ensure that we are never making assumptions that are too big and therefore, we can constantly course-correct ourselves to be able to arrive at our desired future state in the most effective and efficient manner. In this paper, we discuss the value, the principles, the process and the best practice of using the OADP.

Introduction

Businesses and IT are often misaligned due to a lack of unifying strategies and objectives, coordination, and a disciplined approach. Businesses are focused on goals, such as expanding into new markets via globalization; mergers and acquisitions; innovating new products and decreasing the time to market of these products; strengthening customer intimacy; streamlining processes and integrating new capabilities to compete in the marketplace; getting timely and accurate information to make good business decisions; and reducing costs. While IT is focused on the technical challenges of dealing with increased system complexity, data explosion, and doing more with less.

The main purpose of EA is to align business goals and objectives with IT infrastructure and solutions via defining future state architectures that are adaptable and agile for

meeting business needs while making it easy to maintain and manage for IT. Implementing an EA provides the unifying program, disciplined approach, and governance that enable business and IT stakeholders to work together to achieve the following:

- *Business Innovation and Agility*: Achieve faster time to market, business agility, and visibility through strategic optimization of mission-critical business processes, business modularity, performance management, and analytics
- *IT Operational Excellence*: Obtain significant cost reductions, and greater efficiency through standardization, rationalization, consolidation, integration, and optimization of technology infrastructure, applications, shared data, and common processes (as applicable to an organization's operating model and architecture principles)
- *Effective Change Management*: Lower risk of making significant changes to your business and IT architectures by using and adopting best practices, prescriptive guidance, reference architectures, and solutions that have demonstrated success in comparable circumstances

While the future state of the business and IT alignment may be easily understood, the way to get to that future state is not often as clear. Enterprises have many moving parts that can often hinder and prevent these kinds of changes to occur in a seamless way. These hindrances can range from technical challenges, such as interoperability and architectural misfits, to organizational challenges, such as human control and management of key functions and processes, to pure financial constraints. Typically, there is no one answer to address these roadblocks to arriving at the future state architecture and, instead, the challenges need to be addressed one at a time through the use of historical data, experience, best practices and, most often, basic human judgment. However, what can help the architect is a single process that connects all the different decision-making factors (business objectives, architecture principles, reference architectures, current capabilities, and so on) to optimize the speed and quality of arriving at the future-state architecture.

Value of an Architecture Development Process

Developing a new architecture is not the same as developing a new application or a new IT system. In those scenarios, those are implementation projects with very usually specific requirements from the all the stakeholders like the end-user, the administrators, the data owners, and so on. When developing a new architecture, you are not merely implementing some detailed requirements, but you are developing a set of principles and guidelines that are going to be used, if done right, across all future implementations of information systems, processes, and applications. It is essential that an architect wear both business and technology hats, concurrently, to be able to design something that serves business and can persist through evolutions in the technology used to implement the architecture.

An architect's role should focus on the following three key objectives:

- Understand how the business is changing
- Understand what the future state architecture will look like
- Shape and influence the technology strategy to align with the business objectives

In our experience, most architectures fail because of the following reasons:

- Lack of understanding of the future state of the business
- Lack of a common language between the business and technical stakeholders
- Lack of ongoing buy-in and adherence to the principles and guidelines defined by the architecture
- Too much emphasis on current state analysis and documentation that consumes an architect to produce a lot of documentation but no real answers around what to do

Having seen many success and failure stories around architecture, it is quite obvious that architects need to be empowered with some tools that address those key sources of failure. One of the first items in that toolbox is an architecture development process. This process is not meant to replace any existing IT implementation methodologies or processes, nor is it meant to replace any existing change management processes around your business. Instead, an architecture development process, such as the OADP, is focused on the alignment of business strategies and IT implementations. Its value is in providing a lean and efficient mechanism to develop a set of architecture principles for the future state and enforcing those principles and guidelines in an iterative manner across every IT implementation project. Both implementers, of specific solutions, and enterprise architects can use the process to ensure alignment in both directions.

Structure Versus Flexibility

Architecture development processes have not been as widely used as they should have been because it was unclear of the real value it brought to the table. And these processes often introduced so much documentation and current state analysis that architects and other stakeholders, who were seeking immediate value from such effort, were being turned off by the initial effort to get started. This is an ongoing struggle, even today, where we need to figure out the right balance between having prescriptive guidance in our architecture development (for example, a structured approach to problem discovery, current state analysis, future state development, roadmap planning, architecture governance, and business case justification) without burdening the minds of stakeholders and architects. They seek to provide just-enough and just-in-time contributions to the architecture development process and also seek the flexibility to change their minds, and their architectural decisions, as they acquire new and more accurate knowledge.

The OADP was designed from day one with an objective to strike this unique balance between structure and flexibility. The following are the key principles adopted by every aspect of the OADP to be able to meet that objective:

1. *Deliver Business Value:* First and foremost, the OADP contains tasks and continuous checkpoints to ensure that architectures are developed with the end goal of delivering maximum value to the business. Starting with properly capturing the business requirements and ending with a clear articulation of business value, the OADP maintains a consistent focus on delivering business requirements with technology solutions.
2. *Stay Practical:* The OADP emphasizes a practical, iterative, and collaborative approach to developing solutions. The focus is to properly define and scope the “critical path” architecture process, and to create “just enough” modeling “just in time” to guide the architecture development, while avoiding the overhead of performing or creating noncritical, low value work and documentation. The iterative approach enables faster development cycles that expedite the delivery of business value. The OADP may be adapted to specific solution sets (for example, specific segmented architectures, business process solution architectures, domain architectures, or IT initiatives) by reusing the same approach but varying the prescriptive guidance and recommended artifacts to further streamline the architecture development process.
3. *Leverage Reuse:* The OADP promotes leveraging architecture reuse in the form of best practice business models and reference architectures from industry and commercial vendors to further expedite the development process. Additionally, OADP prescribes reuse of the current, business aligned, enterprise IT portfolio to maximize existing investments and minimize disruption.

Oracle Architecture Development Process

Oracle Corporation is the world's largest enterprise software company, offering solutions in every tier of an enterprise's business. Organizations are looking to Oracle to provide enterprise solution architectures that align with their business strategies and architecture principles, while integrating practically with their current, heterogeneous IT environment. Hence, Oracle created the OADP to provide our customers and partners an approach that was built upon the several decades of knowledge Oracle has acquired from working on these challenges of implementing enterprise IT solutions at virtually every corner of every major industry that needs such technology.

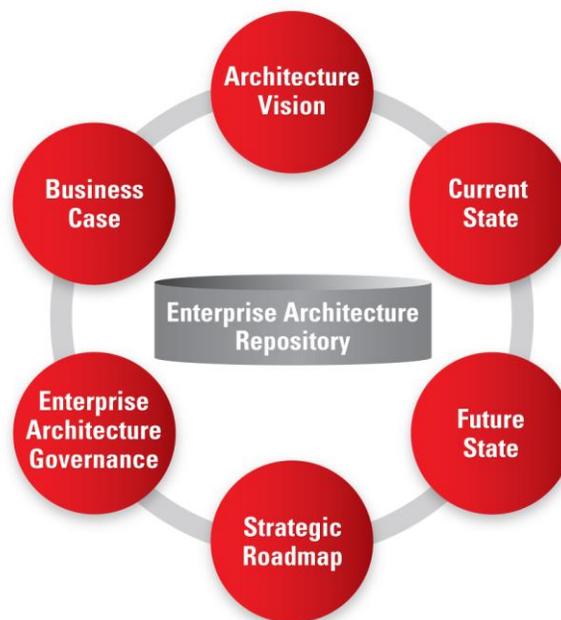


Figure 1: High-Level Phases of OADP

The OADP was designed, from the beginning, to be integrated with pre and post processes that typically occur around architecture and solution development. At the front end, the OADP integrates with business discovery processes, such as Oracle Insight, to leverage the relationships and problem discovery content in an architecture development context. At the tail end, it integrates with the Oracle Unified Method (OUM) processes for implementing the recommendation from the architecture development effort.

Architecture Vision

The Architecture Vision Phase is the first step in architecture development process. It is possibly one of the most important phases in the process since it frames the overall architecture discussion with regards to the business objectives from the engagement and a concrete scope for the area(s) to be addressed by such an initiative.

The Architecture Vision phase focuses on developing and delivering the following key high-level artifacts to the stakeholders of the engagement.

1. *Business Architecture*: A view of the business goals and objectives, business functions, and the organization involved. This is one of the views in the OEAF. Almost every architecture framework in the industry (for example TOGAF, FEA, Zachman, and so on) has a corresponding view for expressing the business architecture. Capturing and understanding the business architecture is critical to the success of the architecture development, because it is very difficult to create a relevant and useful architecture if we don't understand how it serves the business stakeholders. The OADP, in conjunction to the OEAF, provides artifact templates and guidelines to capture the business architecture information using some practical and just-enough mindset.
2. *Architecture Maturity Assessment*: In addition to understanding what the business is trying to accomplish with their business architecture, we need to perform an assessment of their current capabilities and ability to achieve their business objectives. In the Architecture Vision phase, the maturity assessment is meant to provide a fast and agile approach to doing current state analysis. OADP provides a set of maturity assessment tools that provide standard dimensions and criteria to quickly and easily make some determinations of how well an organization and an enterprise is aligned to meet their business objectives. Those dimensions include IT capabilities, governance, IT management structures, funding models, and so on. After we can get a sense for the level of maturity of the enterprise's architectural capabilities, it is our responsibility to make a recommendation and a hypothesis for where the enterprise needs to be, in terms of maturity level, to be able to meet their business objectives.
3. *Architecture Principles*: One of the most important deliverables from the Architecture Vision phase is a set of organization and architecture principles that acts as a guiding force for every architectural decision throughout the process. In the OADP, we use a new artifact type called the Architecture Principles Map, which is essentially a collection of principles organized by the domains of an EA framework (the OEAF organizes by Business, Application, Information, Technology, and Governance). The purpose of the principles map is to illustrate not just the individual principles themselves but how those principles influence and shape other ones. For example, you may have an application architecture principle of "Common Use Applications" (i.e. reuse applications whenever possible) that may drive and influence a technology architecture principle of a "Standard-Based Service-Oriented

Architecture.” Knowing the principles and their relationships can serve as a foundation for decision-making throughout the architecture development process.

4. *Architecture Scope*: Finally, at the end of the Architecture Vision, we must define the concrete scope of the architecture engagement. Based on our understanding and assessment of the business objectives, strategies, and current maturity of their architecture, we need to recommend some areas that yield the most progress towards their goals. Scoping can be done by business segments (for example, business processes, business functions, organizations, and so on) or by architecture domains (applications, infrastructure, security, information, and so on). The slicing of the scope for the architecture should depend on business priorities and critical architectural dependencies.

At the end of the Architecture Vision phase, you should have set the expectations with the customer on a high-level vision for a future state architecture and the areas of recommendations (for example, information architecture, security architecture, sales automation process architecture, etc.) you expect to address. Keep in mind that you can always iterate and refine your business architecture artifacts, maturity assessment reports, and principles as you learn through executing the process.

Current State Architecture

The Current State Architecture phase validates or discovers the customer’s key requirements and drivers for change and assesses the current state architectural capabilities in meeting the organization’s business objectives. While current state analysis should be driven by the problem being addressed, there are some best practices on how to navigate the different areas. Once again, we can use the OEAF or any similar industry framework (for example, TOGAF or FEA) to help structure the current state analysis by the following dimensions:

- *Current Business Architecture*: Inventories and relationships around the business functions, processes, and organizations around the problem we are addressing
- *Current Application Architecture*: The set of information applications and processes supporting a particular architecture scope
- *Current Information Architecture*: An information asset inventory, a high-level enterprise data model and the data flow patterns around a particular architecture scope
- *Current Technology Architecture*: An inventory and physical architectures of the technical services and capabilities supporting the information and the application architectures

Oracle’s approach for current state architecture focuses the efforts on high value targets and iteratively drills down to details as needed. This practical approach avoids wasting resources collecting unnecessary details of the current state and focuses on the minimum required to accurately develop an architecture plan and build a business case in future phases.

Future State Architecture

The Future State Architecture phase is when we develop a set of recommendations to develop out a future state architecture that factors the following four inputs:

- Business Objectives and Strategies
- Architecture Principles
- Current State Analysis
- Reference Models and Architectures

These four areas of inputs can serve as a starting point for deciding what a future state architecture should be. While the business objectives and architecture principles can serve as the starting point for developing the future state architecture, the reference models and architectures and current state analysis can be instrumental in highlighting the gaps between the current and future states.

The Future State Architecture phase needs to deliver the following key outputs:

1. The future state architecture artifacts around the scope of the EA engagement
2. A set of architectural gaps that exist between the current and future states
3. A set of architectural recommendations and a cost-benefit analysis for those recommendations that aim to close the gaps and develop out the EA.

The Future State Architecture phase is possibly the most important phase in the OADP and should be approached with a highly collaborative and iterative mindset. Assumptions must constantly be tested and verified with the customer. Architecture blueprints must be tested for adherence to the principles defined in the Architecture Vision. And finally, each architecture decision must be validated and justified by a concrete business case.

Strategic Roadmap

The Strategic Roadmap phase creates a progressive plan to evolve toward the future state architecture that

- Maximizes the value from each phase of the roadmap
- Minimizes the risk and cost for proposed EA initiatives and solution implementation
- Considers technology dependencies across phases
- Provides the flexibility to adapt to new business priorities and to changing technology over time.

This phase starts with the creation of a prioritized list of architectural changes that drive the creation of an implementation plan. The risks and costs for each project in the implementation plan are then defined and a high-level transition plan is developed. It is very unlikely that we ever want to do a “big-bang” approach to transitioning from the current state to the future state architecture. Instead, a much better approach is to break up the architecture recommendations from the Future State deliverable into several phases based business priorities and dependencies. After those transition phases are defined, we need to define the transition architectures that act as architectural checkpoints in progressing it toward the future state architecture. This approach is very useful in managing risk and also, feeding back knowledge to iterate and refine and future state architecture.

The Strategic Roadmap should produce the following key artifacts:

1. A prioritized list of architecture recommendations based on the list from the Future State Architecture phase
2. A set of transition architectures that progress the current state to the desired Future State using those architecture recommendations
3. A project implementation plan implementing each transition
4. A cost analysis of each project implementation and a benefit analysis from each transition architecture

The outputs and recommendations from the Strategic Roadmap should give a clear picture to all stakeholders regarding timeframe and investment requirements for arriving at the desired Future State Architecture. Once again, this must be developed collaboratively with the customer and their Project Management Office who typically deals with implementing change requirements to their IT infrastructure.

EA Governance

The key purpose of the EA Governance Phase is to help customers develop a governance strategy that has one single mission: ensure a successful transition to the desired Future State Architecture. This can be achieved if there is a governance structure that ensures alignment between the project implementations with the overall business objectives, architecture principles, and the roadmap. Governance is best implemented when there is a clear and simple way to measure progress and success of the implementation of the macro EA and the micro solution implementation from each project. As a result, the OADP emphasizes a very practical and quantitative approach to governance where metrics and measures are clearly defined with the customer to measure meaningful progress from each implementation. The framework is quite simple and breaks down along the following dimensions:

- *People*: An effective governance strategy needs to define some basic structures and bodies responsible for implementing the governance policies and processes. These individuals and bodies should not be separate from the stakeholders who benefit or work on the architecture implementation. In fact, the governance bodies should be represented by people from both the business and IT organizations. Roles and responsibilities should be clearly defined to own governance of architecture segments, individual projects, and overall alignment and performance to the business objectives and principles using clearly defined key performance indicators (KPIs).
- *Processes and Policies*: For governance to be practical, there needs to be a firm commitment to keeping the processes and policies as lean and unobtrusive as possible. Therefore, the processes and policies should be kept to a minimum when enforcing and implementing governance for an EA. The basic objectives of processes and policies should be alignment, performance measurement, and communication of new requirements and strategies.
- *Financials*: Finally, one of the most important objectives of implementing governance is to measure and ensure progress in terms of business benefits. And the most convincing and objective measures of progress are typically those that can be clearly quantified as part of a business case. A business objective, such as lowering data storage costs by 50 percent, is a metric that can be used by a governance body to review if the architecture is delivering upon those kinds of objectives. The more specific and clear the measures are, the better and more enforceable governance can be.

A key principle behind effective EA Governance should be to reuse and embed itself into existing organizational processes and cultures. It should not try to be a “new” concept to the organization because that often attracts the most skepticism. Instead, governance should be a natural checkpoint and validation that occurs inside our regular project performance and alignment reviews. The key difference is that we are providing some tools and techniques to better measure progress and alignment to our original goals. For governance to be successful and effective, it requires the organization to buy in and commit to the goal of honest measurement.

Business Case

The Business Case phase provides a cost-benefit analysis for the architecture and resulting IT projects in the roadmap. This phase can be initiated at the beginning of the OADP lifecycle since having a focus on the business case can drive decision in almost every phase of the process, such as Current State, Future State, and Strategic Roadmap analysis. For example, knowing the costs of certain IT systems in the current state can drive the decisions around the future state recommendations. In essence, the work in the Business Case phase validates that the defined Future State Architecture and proposed Roadmap achieve business-IT alignment and meet the business objectives.

During this phase, the current state risks and costs are collected and compared against the future state architecture benchmarks and targets for costs and risks. A cost-benefit analysis is then generated and validated with the key stakeholders. The OADP does not advocate a full-blown business case development exercise that requires several financial models and MBA graduates to decipher the meaning of the data. Instead, it should be a practical and simple analysis of the investment required to develop the future state architecture, the projected benefits expected from the investment, and a degree of qualitative and quantitative risk associated with the architecture development process.

OADP and the OEAF

The OADP provides an architectural development process that can be used for developing architectures of various scopes. Although the OADP can be used at a project or solution level, the OADP achieves its greatest value when complementing an Enterprise Architectural Framework. These frameworks provide a unified and consistent structure for realizing an Enterprise Architecture in an organization.

The OADP achieves its greatest value when combined with the OEAF. The OEAF provides a streamlined framework that helps Oracle collaboratively work with customers to develop 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 to a customer’s selected EA methodology. By focusing on business results and leveraging Oracle’s unique EA assets and reference architectures, the OEAF can be employed to efficiently create a strategic roadmap with sound technology solutions backed by a business case for business and IT alignment.

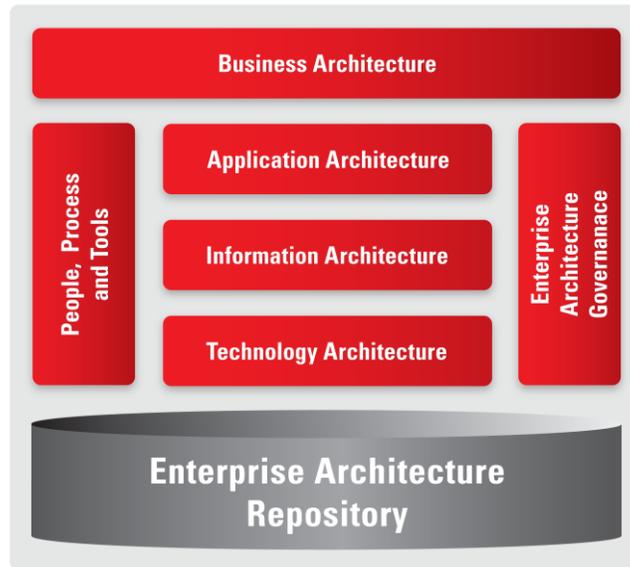


Figure 2: Components of the OEAF

The OEAF is divided into the following seven core components:

- Business Architecture defines the key business objectives and strategies that the EA is meant to realize.
- Application Architecture describes the architecture for enterprise applications, information systems, and automation processes that support the business architecture.
- Information Architecture describes the components for managing information across the enterprise.
- Technology Architecture describes how the infrastructure underlying the business, application, and information architectures is organized.
- The People, Processes, and Tools section identifies the resources used to define EAs and architecture solutions.
- EA Governance is used to guide each project and ensure alignment with the EA during IT transformations and solution implementations.
- EA Repository is used to organize the artifacts and deliverables associated with the EA.

The OEAF shares the same core guiding principles as the OADP providing a practical, agile, and complete solution for EA. In addition, by leveraging Oracle’s Reference Architectures and industry-specific best practices, the time and risk associated with developing an EA are substantially reduced.

Applied OADP

The OADP process is a base architecture development approach that can be applied to a variety of scenarios and problem types that most enterprises are experiencing in today's environment. OADP is structured in a manner that lets us tailor its tasks, in each phase, so that we can have focused processes around very specific architecture problem sets. The OADP portfolio current offers the following of applied processes:

1. *Application Portfolio Rationalization*: A specialized version of the OADP process that prescribes a practical and open approach to rationalizing costly redundant Business Applications (for example enterprise resource planning (ERP) systems, custom, and legacy business applications) that an enterprise can end up with after one or more merger and acquisition actions. The specialized Application Portfolio Rationalization process leverages the overall structure of the OADP phases, but focuses the tasks on application rationalization. For example, it takes the OADP task around collecting Current State artifacts and prescribes the specific and “just-enough” set of models and artifacts that are required to perform an effective application rationalization exercise.
2. *IT Infrastructure Optimization*: A similar process to the Application Portfolio Rationalization, however, focused primarily on technology and infrastructure components of the enterprise. Instead of rationalizing the ERP applications themselves, the IT Optimization focuses on rationalizing and optimizing the usage of the components that support the applications and other enterprise IT systems. For instance, IT Optimization can be used to rationalize data center infrastructure around grid computing, virtualization, security, enterprise management, and other infrastructure that end-user businesses rely upon. This applied process is a very complementary process to Application Portfolio Rationalization, since the two exercises are chasing the same business objective of lowering overall cost and risk of running in the IT without sacrificing innovation and agility in the business. These exercises can be sequenced in parallel or in serial as long as the architect has an understanding of the dependencies between the two areas in the EA.
3. *Information Rationalization*: An applied process that focuses on rationalizing the enterprise from the perspective of information storage, management, ownership, exchange, and consumption. This process provides specific guidance and prescriptions on how to create a single unified enterprise data model that aligns with the operating model and the data governance structures in the organization. It provides a set of best practices around architecture artifacts and templates that can be applied to capture and assess the current state of a customer's enterprise information architecture. It also provides a set of reference information architectures and patterns that can be adopted to develop the future state.

The portfolio of applied OADP processes is expected to grow as we keep applying the base OADP process to different types of architecture problems that seem to correlate quick closely to

external circumstances, such as economic climates and other social and environmental factors in the IT industry.

Conclusion

The OADP defines a practical, streamlined process for building architectures that align business requirements with IT solutions. Built on the foundation principles of practicality, delivery of business value, and leveraging reuse, the OADP provides the structure for building architectures that increase the value of IT to the business while promoting cost reduction. Although the OADP can be used with many EA Frameworks, coupling with the OEAF can leverage additional reference architectures and industry best practices, reducing the level of effort and risk associated with the development of an EA and subsequent Solution Architectures.



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