

# Executive Summary

## An Application-Centric Approach to Understanding Architectures

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Enterprise architecture (EA) has been getting great attention lately, but this newfound importance has raised as many questions as it has answered. For example: What exactly is enterprise architecture? How does it relate to software architecture? And perhaps most importantly, how do we integrate EA into the development process?

While many different approaches to enterprise architecture have been taken, most agree that an EA strategy has the following goals:

- To align the IT assets of an enterprise with the business goals
- To develop a strategy for migrating to a future state where the enterprise is more responsive, efficient, and agile
- To categorize the total set of current and future IT assets in order to create an overall enterprise context within which applications operate

Creating an enterprise context involves collecting and integrating a wide variety of information and making that information available and meaningful to application development. Two concepts — separation of concerns and architectural views — are used to help manage the complexity of this information and focus it on a particular aspect of the application development lifecycle.

Initially, the enterprise context is used to frame the scope of the application so that both the specific application requirements and the

larger enterprise requirements can be addressed. These are combined in the architectural views that define the application's *problem* space. The specification of the problem is intentionally kept separate from the technology that may be used to implement the application in order to provide clarity and focus to the identification of real business requirements.

With a clear understanding of the requirements, the application's *solution* space can be defined. Again, architectural views are used to partition the solution space to best address the following concerns: application structure, technical infrastructure, implementation technologies, implementation processes and methods, enterprise standards and guidelines, deployment, and operations.

### EA VIEWS

At the enterprise level, we use the following architectures to meet the requirements and concerns of different stakeholders:

- **Operations architecture** — describes how to deploy, operate, and maintain all of the different applications within the enterprise
- **Implementation architecture** — describes how to implement applications using specific technologies, including technical details, processes, and methodologies
- **Technical architecture** — describes how to build the

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services required to support operations and to satisfy specific technical requirements for distribution, scalability, reliability, device independence, and application integration

- **Application architecture** — describes how to use the technical architecture to build applications that meet broader goals of application commonality and that support shared capabilities between many applications
- **Integration architecture** — describes how different applications are tied together in response to enterprise requirements for integration and inter-operation between applications
- **Business architecture** — describes the enterprise from a purely business perspective
- **Enterprise architecture** — essentially the collection of all other architectures, combined to meet specific business and enterprise requirements and goals. It formally defines each of these architectures; the relationships between them; and frameworks, standards, and governance for the enterprise.

## APPLICATION ARCHITECTURE

From the application perspective, we focus on two major viewpoints: clearly defining the business problem to be solved (the problem view) and designing the IT solution to the problem (the solution view).

The problem view defines the business requirements in business terms, devoid of IT specifics. It is primarily responsible for defining the business architecture.

The solution view defines how the application will be implemented to meet the requirements of the problem definition. It is responsible for applying the following architectural views to the specific application:

- **Application architecture** — what components will be built
- **Operations architecture** — how the application will be deployed

- **Technical architecture** — how to use the technical infrastructure
- **Implementation architecture** — how to implement the application with the chosen platforms
- **Integration architecture** — how different applications are tied together

Another important architectural technique we employ is the use of formalization and industry standards. This leads to better communication of the architectural concepts, the ability to harness standards-based tools, and preservation of the investment in architecture and design. For the formal specification of the architecture, we use UML. But we extend its value by conforming to the specifications of Model Driven Architecture (MDA), which allows us to directly tie the formal specification of our architecture into the automation of our development process.

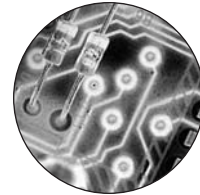
To be successful, architecture must do more than describe the enterprise context or a specific technical solution. It must:

- Provide a solution to the business system within the enterprise context
- Communicate this solution to all stakeholders
- Provide guidance to system architects, designers, and implementers
- Ensure conformance to the architectural principles and enterprise constraints

An important technique for meeting these goals is to separate the concerns of various stakeholders into different architectural views.

At a high level, one such separation of concerns is between the specification of the problem and the specification of the solution. Within both of these broad views are specific architectural viewpoints that address the enterprise, the application, or both. These are key to effectively communicating the architecture to all stakeholders.

Finally, we draw on other industry standards to help with implementation and conformance. Together, EA views and MDA provide a foundation for meeting these architectural goals for both the enterprise and application implementation.



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