

## Architecture for the Virtual Enterprise: Order From Diversity

Jeff Comport

Enterprise architecture must provide structure and efficiency benefits, while addressing numerous components from multiple origins. Here are the definition, objectives and elements of Gartner's new enterprise architecture.

## ANALYSIS

---

Enterprise architecture can no longer be about conformity and governance. A snapshot of any given enterprise shows diversity through a heterogeneous mix of applications, which are bought, built and subscribed; technologies of multiple vintages and origins; and business organizations that are opportunistic, strategic or holdovers from mergers and acquisitions. Over time, enterprise components come and go, further confounding conformity and rigid compliance goals. Unenforceable enterprise rules are ignored, leading to mob rule or chaos.

Enterprise architecture for the virtual enterprise must provide structure and efficiency benefits, while accommodating numerous elements from multiple designers and origins. It must create order from diversity. Here, we examine the definition, objectives and elements of the next generation of Gartner's new enterprise architecture.

There are many perspectives on the nature and scope of architecture. For some enterprises, it is a set of rules. For others, it is a logical and technical design. Still others view architecture as a methodology for achieving an effective design. Bill Rosser's "Defining Architecture for IT: A Framework of Frameworks" contains definitions and terminology that we will use in future Gartner research.

Choices define relationships among architectural components. Components are at multiple levels: multienterprise, enterprise, application, infrastructure, logical and physical. The "technology power grid" is responsible for the loose coupling of architectural components; it combines them, by architectural style and design patterns, into an architecture that can achieve a particular business objective. Logical and physical, the grid builds on Gartner research on the emergence of the "enterprise nervous system" and includes enterprise-to-enterprise architecture. In "Enterprise Architecture: Process and Methodology," Bill Rosser examines best practices in working with and organizing components.

Modern enterprise architecture is based on the management of a portfolio of choices. Choice implies flexibility; however, architectural choices often can be intertwined, leading to multiple implications that are unintentionally constraining. Nikos Drakos and Regina Casonato provide tips and describe potential traps to help enterprises manage architectural choice in "Maintaining Flexibility Through Architectural Choices."

Creating an architecture that preserves the loose coupling of modern architectural components differs from the unified view of monolithic architectures. Planning must occur in layers, with interfaces to adjacent pieces in view, but with the detailed implementation of partner pieces hidden in a "black box" and often beyond control. Roy Schulte introduces architectural planning approaches for these loosely aligned system elements in the "Enterprise Architecture and IT 'City Planning.'"

Technology architecture — sometimes called "platform architecture," "system architecture" or "IT architecture" — is the most common expression of enterprise architecture. Essentially, this is a process for developing a standard "buy list" that specifies the hardware platforms, operating systems, database management systems, development tools, programming languages, middleware, e-mail services, security facilities, directories and other products that are approved for enterprise use. Gartner's new enterprise architecture assumes the challenge of managing these core technology elements by documenting their roles in the form of "bricks," as described by Roy Schulte in "Technology Architecture: 'Bricks' of Enterprise Architecture."

While technology architecture is analogous to compiling a list of building materials and tools, information architecture is analogous to drawing a building blueprint. Information architecture creates the logical design specifications for an application system or set of systems. It may

involve business, organization, object, process or data models, and it often follows established design patterns. Gartner's new enterprise architecture exposes patterns as the primary way to leverage established systems techniques, while enabling enterprise-specific innovation. Roy Schulte examines this new paradigm in "Information Architecture for the Virtual Enterprise."

The enterprise technology power grid is populated by the portfolio of applications and systems that serve an enterprise's business processes. Increasingly, partner systems and connections from other enterprises are participating in the grid. Connections and relationships are both physical and logical, and they must be established, managed and monitored. A central integration competency center is critical to reduce the time and cost required to integrate application systems (including connections to trading partners) in a large enterprise grid. Roy Schulte and Gary Long examine this new best practice in "The Role of the Integration Competency Center."

A virtual enterprise seeks to create transparency of components' location within the enterprise and beyond; these components come together via the enterprise technology power grid to act as systems and services. Although enterprise architectures have grown to embrace the virtual nature of system components, they often neglect the increasing mobility of users. Mobile technology gives users the freedom to access the system through various networks, connection types and form factors. Users expect, but seldom receive, transparency in the form of consistent and appropriate system response when they move from device to device and network to network. In "The Impact of Mobility on Enterprise Architectures," Simon Hayward describes how mobility support must be a part of modern architectures, rather than being added as an afterthought or treated as a separate architecture.

Enterprises increasingly will share responsibility for key technical and standards decisions with their trading partners; these decisions will affect their internal integration projects. Therefore, there will be more tension regarding the unilateral control of internal technology and standards choices, and agreements on business-to-business (B2B) technology and standards, such as how to reconcile internal security systems with those used for B2B collaboration. In "Enterprise-to-Enterprise Architecture for Virtual Enterprises," Benoit Lheureux and Jeff Comport examine the evolution of traditional electronic data interchange frameworks to more-modern delivery networks, which are designed to coexist with enterprise architecture and integration frameworks.

Architecture for the virtual enterprise anticipates and accommodates diversity. It builds on past architectural principles by focusing on the importance of layers and loose coupling. Enterprises are realizing that systems are becoming more dynamic. Flexibility in substituting components and participating in component development depends on the ability to expose and reconcile descriptive information and metadata about components and overall systems. Although central control of this information is unlikely, layers of control are achievable. Gartner's new enterprise architecture uses business styles, design patterns, bricks and the technology power grid to give structure to this multilayer architectural plan. Enterprises that model their enterprise architecture on this plan can achieve a good balance of diversity, control and multisystem integration within the enterprise and in enterprise-to-enterprise frameworks. The life cycle approach to architecture supports a consistent evolution of the plan and conforming systems over time.

## Features

"Defining Architecture for IT: A Framework of Frameworks" — Defining architecture and related terms. **By Bill Rosser**

"Enterprise Architecture: Process and Methodology" — Establish a process for creating an enterprise architecture. **By Bill Rosser**

"Maintaining Flexibility Through Architectural Choices" — Reconcile business changes with shifts in IT platforms. **By Nikos Drakos and Regina Casonato**

"Enterprise Architecture and IT 'City Planning" — Understand the differences in planning architecture for application integration vs. intra-application architecture. **By Roy Schulte**

"Technology Architecture: 'Bricks' of Enterprise Architecture" — Consider how modern technology architecture differs from traditional technology architecture. **By Roy Schulte**

"Information Architecture for the Virtual Enterprise" — Use an "exchange" information model to organize application integration. **By Roy Schulte**

"The Role of the Integration Competency Center" — Create a central integration competency center to help integrate application systems. **By Roy Schulte and Gary Long**

"The Impact of Mobility on Enterprise Architectures" — Address mobility as a disruption of — and potential benefit to — software architectures. **By Simon Hayward**

"Enterprise-to-Enterprise Architecture for Virtual Enterprises" — Extend the enterprise nervous system to enterprise-to-enterprise scenarios. **By Benoit Lheureux and Jeff Comport**

This research is part of a set of related research pieces. See "Enterprise Architecture" for an overview.

## REGIONAL HEADQUARTERS

---

Corporate Headquarters  
56 Top Gallant Road  
Stamford, CT 06902-7700  
U.S.A.  
+1 203 964 0096

European Headquarters  
Tamesis  
The Glanty  
Egham  
Surrey, TW20 9AW  
UNITED KINGDOM  
+44 1784 431611

Asia/Pacific Headquarters  
Level 7, 40 Miller Street  
North Sydney  
New South Wales 2060  
AUSTRALIA  
+61 2 9459 4600

Latin America Headquarters  
Av. das Nações Unidas 12.551  
9 andar—WTC  
04578-903 São Paulo SP  
BRAZIL  
+55 11 3443 1509