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Message Driven SOA -- Enterprise Service Oriented Architecture

Service virtualization and component applications

Driving reusability and ROI in SOA deployments

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SERVICE VIRTUALIZATION AND COMPONENT APPLICATIONS

Driving reusability and ROI in SOA deployments

Executive Summary

Over the past ten years, Enterprise IT infrastructures have spiraled in complexity, with the addition of hundreds of packaged applications to pre-existing legacy systems, leading to the creation of difficult-to-access information silos. With business information scattered across enterprise and partner channels, it is increasingly difficult for managers to get timely access to relevant information.

A partial solution to this muddle has been the implementation of EAI (Enterprise Application Integration) and related technologies, especially since the mid-90s. Such systems, however, have had only limited success and extending current EAI solutions is proving to be a very expensive proposition that falls short of enterprise performance, reliability, scalability and affordability goals. To further complicate the problem, platform vendors and packaged application vendors alike have over the years added integration technology to their product offerings, with the result that a typical enterprise now has multiple middleware and infrastructure solutions to 'integrate' within its already crowded I/T portfolio.

In the midst of this complexity, the key requirement for enterprises remains unchanged: enterprises today need to *extract value from heterogeneous software assets* as easily and efficiently as possible. The key to the extraction of this value is not the addition of even more packaged applications or infrastructure; rather, it is the ability to extract business-value from existing business and legacy applications spread through the enterprise. This requires the ability to abstract the relevant business logic from multiple business applications into *virtualized Services*, and assemble these Services into flexible, end-user Composite Applications for business managers, based on business requirements.

Composite applications are end-user business applications that are dynamically synthesized from existing virtualized Services (including Web-Services) in response to external business requirements; Composite applications reuse existing services, and are typically composed using visual tools with little or no programming, leading to increased flexibility and dramatically enhanced productivity.

Fiorano's SOA platform is the first Composite Application Platform built on a fully-distributed Enterprise Services Grid architecture. In an era of *doing more with reusable services*, Fiorano SOA platform enables the next wave of comprehensive and affordable end-user composite application solutions, unifying applications infrastructure within an enterprise, and delivering the value IT departments are looking for, via reuse, reduce TCO, flexibility and faster time-to-market.

The emergence of service virtualization and integrated composite applications

The vision of a framework that allows the synthesis of end-user solutions using business logic resident in packaged and legacy systems across the enterprise is not new. This vision is only now becoming reality through the convergence of several business and technology trends:

- Service Virtualization - is a concept that separates the implementation of the business logic within a service from the governance, security and deployment configuration of the service. Service virtualization provides two important benefits: first, it reduces the amount of code written, since developers only implement the business logic of a service while the runtime infrastructure manage all deployment details; second, service virtualization enables greater reuse and flexibility since runtime bindings, security, governance information and other attributes are changed at deployment time without the need to change any code.
- The emergence of the real-time, event-driven enterprise built on standards-based technology, specifically the Java Message Service (JMS) and the related Enterprise Services Grid – a centrally managed, linearly scaling, peer-to-peer grid of Service Containers built on top of a JMS compliant Enterprise Service Bus (ESB) which enables heterogeneous services scattered across the enterprise to communicate and exchange information seamlessly

- The widespread adoption of industry standards, specifically those for Web-Services, Service Component Architecture (SCA) and Java Business Integration (JBI), which encourage enterprise applications, both packaged and legacy, to open up their interfaces and expose business functionality as Services that can be accessed across the enterprise in a controlled fashion.

The exposure of previously hidden enterprise business logic as virtualized services allows enterprises to drive value from their existing software assets. Once accessible across the enterprise, existing business logic from disparate applications across the enterprise can be used as reusable building-blocks to rapidly synthesize interactive, end-user composite applications to solve specific business problems.

It is important to understand that without a framework and technology to expose existing business logic, it is not possible to synthesize composite applications. The emergence of the Enterprise Service Grid – a centrally managed, linearly scaling, peer-to-peer grid of Service Containers built on top of a JMS compliant

Enterprise Service Bus (ESB) allows organizations to expose information previously hidden in silos virtualized Services, and to leverage and reuse these Services efficiently to create business value. Service Virtualization provides a way to dynamically reuse, deploy and scale the deployment of on-demand Services across the Enterprise Grid, including the ability to move services between Services across Development, QA, Staging and Production environments. Figure 1 illustrates the how a Service Grid logically exposes multiple application and infrastructure components as Services available to the entire enterprise.

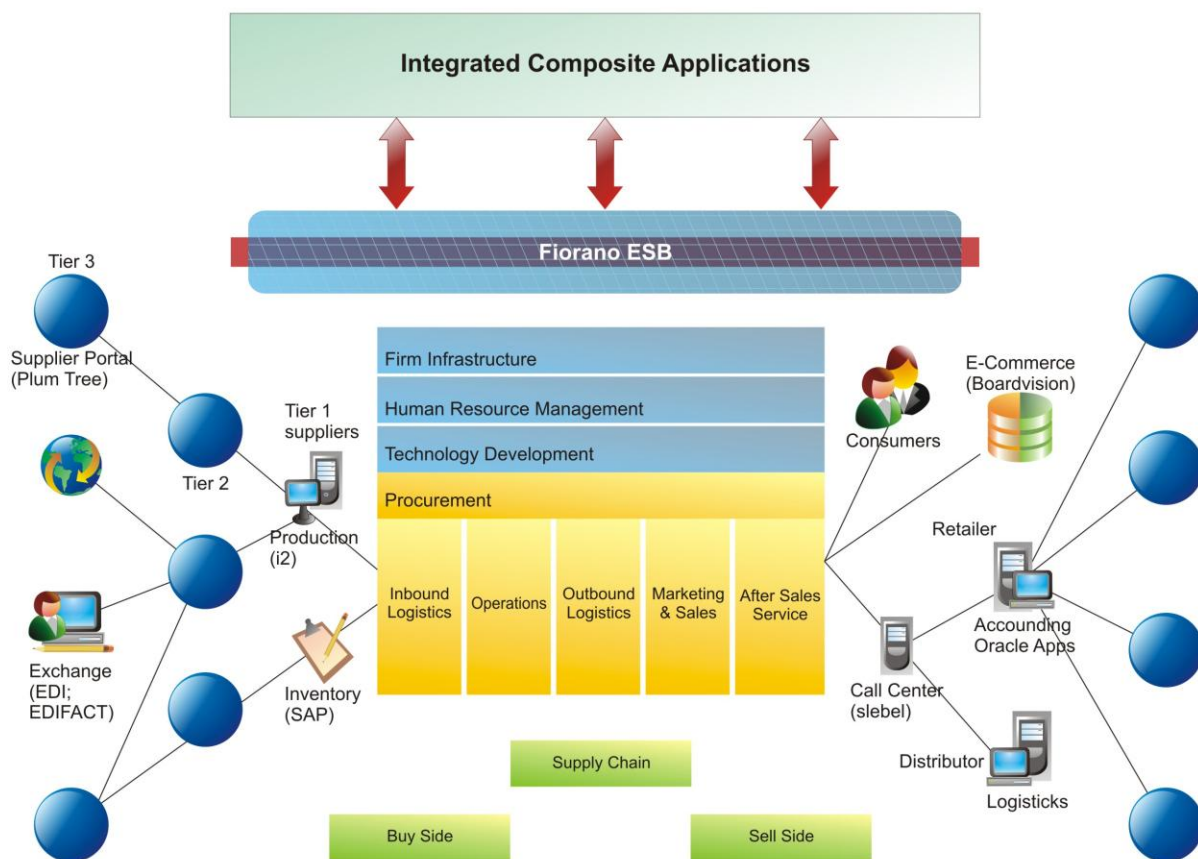


Figure 1: An example of an Enterprise Service Grid at work in today's Enterprises

The Fiorano SOA platform links all application and infrastructure systems within an enterprise via a standards-based, service-oriented architecture. For instance, J2EE Servers, .NET Servers, Legacy Applications, ERP, Accounting, Supply Chain and Logistics systems are all exposed as nodes on the Service Grid. This architecture allows existing business logic, formerly hidden in closed information silos in the form of packaged and legacy applications and infrastructure, to be exposed as virtualized Services. Business users can now draw on a palette of Services and dynamically assemble end-user composite application solutions without programming, using visual tools. This ability to draw on existing business logic and processes residing anywhere within the enterprise to rapidly assemble solutions for particular problems, leads to unmatched flexibility, increased productivity and improved responsiveness to changing business conditions.

Examples of composite applications made possible by Fiorano SOA Platform include, but are not limited to Distributed CRM, Distributed, real-time Supply-Chain, Distributed Order Management, Logistics, Manufacturing and many others.

Heterogeneous SOA – Leveraging Standards to deliver interoperability and portability

The benefits of Business Process Automation, flexibility, ease of use and return on investment made possible by composite applications were previously promised – and continue to be promised - by EAI systems, and, increasingly, by platform and packaged application vendors as they add integration functionality to their products. Unfortunately, these systems fail to deliver comparable value for many reasons including, but not limited to

- High implementation and maintenance costs (often as much as five to ten times the cost of the EAI software itself), combined with a substantial incremental costs for each new application or business process to be deployed
- Vendor lock-in, leading to increased business risk in an uncertain business climate
- Inability of even the most sophisticated EAI broker or packaged application to easily communicate with and effectively use the information within the myriad of enterprise I/T infrastructure encompassing application servers, portals, web-servers, legacy applications, workflow systems and multiple middleware platforms, all operating in a multi-language, multi-platform environment

Composite Applications solve these problems by allowing easy coordination between disparate enterprise systems, both within and across the firewall. Individual services within composite applications can be developed in different languages (such as Java, C, C++ and C#, among others) and exposed using industry standard web-services interfaces, allowing efficient reuse and portability. Further, in contrast to vendor lock-in, adherence to standards allows not just true **interoperability** between platforms (for instance, between J2EE and .NET), but true **portability** between different implementations of the same standard.

Composite applications work with whatever technology or systems an enterprise has, by simply pulling information from any enterprise asset across the network, with individual services in the composite application running on and accessing disparate, often competing, platforms and packaged applications. Coupled with sophisticated visual tools, the reuse of enterprise software assets in the form of standards based virtualized Services allows I/T developers and managers to rapidly assemble end-user composite applications tailored to solve specific business problems – something that was not previously possible.

The ease of application assembly can be compared to the ease of composing spreadsheets in contrast to custom developing a software application to solve financial problems.

Early analyst estimates suggest that platforms such as Fiorano SOA Platform will save over 50 percent in maintenance costs alone, in addition to an over 60% rise in productivity in comparison to existing Integration, BPM and Application Platform technologies.

Optimized performance through a distributed architecture

Fiorano SOA Platform is the only service virtualization implemented on top of a fully-distributed, standards compliant Enterprise Service Grid. Fiorano's distributed architecture allows multiple business process flows to be processed concurrently, maximizing performance and throughput. Further, the ability to reuse existing hardware at the end-points of enterprise networks enables a linear, build-as-you-grow scalability model to meet rapidly changing business demands. Businesses can now meet dynamic surges in demand without having to provision new systems, deliver undisrupted services and increase customer satisfaction.

Besides optimizing performance and scalability, the Fiorano distributed-grid architecture prevents any single point of failure within the system, altogether avoiding the problems of commonplace, hub-and-spoke broker-based integration/BPM systems.

Return on Investment

Although traditional integration solutions have had some success, the overall track record of EAI has been questionable. For instance, Gartner estimates show that each dollar of I/T spent results in 50 cents of maintenance cost; Forrester predicts that for each dollar spent EAI technology purchases, an additional \$5 to \$10 are spent on system integration costs to deploy the solution. These high costs are fueled primarily by proprietary software requiring high training costs and specialized skills, vendor lock-in, and a lack of adherence to standards.

The emergence of open-standards for middleware, in particular the Java Message Service (JMS), Web Services, SCA (Service Component Architecture) and JBI (Java Business Integration), paves the way for Fiorano to drastically change the ROI track record of EAI. Fiorano drives ROI by fostering reuse of enterprise software assets across multiple composite applications via virtualized services.

Further, visual composition tools allow end-user solutions to be designed and deployed *with little or no programming*, dramatically reducing the costs of developing, deploying, maintaining and, most importantly, of changing end-user business applications in response to changing business dynamics.

“Applications designed from conception using a service-oriented architecture (SOA) can be incorporated into composite applications more easily than can monolithically designed (non-SOA) applications.”

Roy Schulte

VP and Research Fellow, Gartner Research

Based on initial deployments, and taking into account analyst estimates, Fiorano's studies show that based \$500,000 for software with 5 man-years of development effort and five years of ongoing support result in maintenance costs being reduced by a factor of five in comparison to products from IBM and Tibco. Further, Fiorano estimates productivity gains of over 300% in comparison to existing integration tools based on savings in application development and deployment time alone.

Summary

Fiorano's SOA Platform Service Grid platform changes the dynamics of integration, BPM and SOA by enabling the rapid assembly of business solutions from existing I/T assets, in near real-time, with little or no programming. Until now, the deployment or modification of enterprise business processes have always required substantial, often intrusive, development efforts, resulting in delayed execution, increased risk, and considerable cost. Fiorano changes these dynamics by allowing business processes to be composed from pre-built Enterprise Services and deployed dynamically, in much the same way as spreadsheets are composed from pre-built formulas.

For the first time in the history of I/T, enterprise managers have the ability to have their software systems react in real-time to changes they demand, truly enabling Change at the Speed of Thought.

About Fiorano Software

Fiorano Software (www.fiorano.com) is a leading provider of enterprise class business process integration and messaging infrastructure technology. Fiorano's network-centric solutions set a new paradigm in ROI, performance, interoperability and scalability. Global leaders including Fortune 500 companies such as Boeing, British Telecom, Credit Agricole Titres, Lockheed Martin, NASA, POSCO, Qwest Communications, Schlumberger and Vodafone among others have used Fiorano technology to deploy their enterprise nervous systems.