



WHAT EVERY TAX PROFESSIONAL SHOULD KNOW ABOUT SERVICE-ORIENTED ARCHITECTURE

A VERTEX INC. WHITE PAPER



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INTRODUCTION

Service-oriented architecture (SOA) represents the future of enterprise software — and it has already begun to effect a change in the dominant computing paradigm as dramatic as previous shifts from mainframe to mini to desktop to client/server.

Oracle and SAP have all moved into SOA for their new feature sets — and with good reason. A 2005 Gartner paper, [Positions 2005: Service-Oriented Architecture Adds Flexibility to Business Processes](#), indicated that a 2004 study on systems integrators showed “79 percent of respondents were using Web services, and all of the others expected to do so within 12 months”.

Sooner or later, your IT department will begin planning for the migration to these new platforms — if they haven’t started already. Do you know your enterprise IT plans for SOA, ERP migration, or ERP consolidation?

This whitepaper is designed to give you the facts you need to know to participate actively, knowledgeably, and effectively in those plans and ensure that the needs of the tax department are served optimally.

GET READY FOR SOA

Gartner predicts that the SOA model will achieve major impact in five years and will dominate the marketplace before the decade is out.

“The adoption of...service-oriented architecture,” Gartner observes, “is progressing quite rapidly. There is, therefore, a significant risk associated with conservative adoption strategies in individual companies. Applications built in 2001 predominantly used traditional client/server application development languages, tools, and architectures; however, this will not be the case by 2006. It will become increasingly difficult to find and maintain experienced developers for legacy applications.”

Migration to SOA is inevitable in your business. The only question is whether you will be prepared for it or not. Tax managers can ensure that their departments will be ready for this sea change by taking four key steps.

Be Alert for Key IT Triggers That Signal Potential Tax Department Impact

Introduction of SOA may ride the coattails of other IT initiatives, or it may be an independent initiative. Some key inflection points are...

- An upgrade or new installation of an ERP system
 - A tax-process centralization
- An announced shift towards service-oriented architecture



Keep the Lines of Communication with IT Open and Active

Talk to your IT department to make sure that your company's upcoming business applications will support service-oriented architecture standards.

Tax managers may not make decisions about platform or application choice, but it behooves you to get involved in the implementation planning of any new ERP deployment or upgrade

Add SOA to the checklist of things you'll want to discuss with IT before and during this process.

Ask the Right Questions

Because SOA implementations may require the participation and cooperation of multiple functions within your company, be sure to surface the important cross-organizational issues early. Ask...

- What new project management structures — and how much funding — will be necessary to coordinate the delivery of a new service-oriented application?
- What new project configurations will ensure adequate technical coordination between related SOA-based applications?

How early in the delivery lifecycle can we identify application dependencies and reuse opportunities?

Focus On Your Business Needs

Deploying SOA is as much a business issue as it is a technology issue. For many companies, in fact, the key challenges will not be implementing the software architecture but defining the business rules and modeling the business processes that the software will serve.

While your IT department is implementing internal uses of SOA — the first step for most companies — stay abreast of the evolution of SOA technology. Identify current taxation issues and re-evaluate your tax processes that may be affected as SOA technology is implemented.

Fundamentals of SOA

Just as Web browsers provide a familiar, standard interface that helps **people** access information and communicate with each other over the Internet, service-oriented architecture helps **software applications** do the same.

What makes SOA so powerful?

First SOA is **standards-based**, defined through public standards organizations such as the World Wide Web Consortium (W3C) and supported — in an unusually high level of cross-industry cooperation — by firms such as IBM, Microsoft, Oracle, Sun, and Hewlett-Packard. (See *SOA glossary* below for a list of the major standards.)



What Every Tax Professional Should Know About Service-Oriented Architecture

Second, it uses **Internet Protocol (IP)** based networks to enable different programs, from different sources, written in different languages, to communicate with each other and exchange data over the public Internet, private intranets or extranets, or other IP-based networks, which are universally available to businesses — without time-consuming custom coding or needing to understand the details of other computer systems. Based on XML, the universal language of Internet data exchange, SOA is based on utilizing coarse service interactions as opposed to traditional fine grained interactions of traditional distributed programming and lets programmers combine existing computer systems in new ways within one business or across many. This technology is more like message oriented processing. Messages are now based on XML documents that can often closely match the underlying business document/information involved in implementing the service.

SOA not only lets applications share data. It allows them to call upon capabilities from other applications without regard to how they were built, what operating system or platform they run on, and what devices are used to access them.

What Does SOA Mean For Your Business?

Service-oriented architecture assists businesses as they connect with their customers, partners, and employees. They enable businesses to extend existing services to new customers. It streamlines business processes to help businesses work more efficiently with partners and suppliers. And it unlocks information so it can flow to every user, human or automated, that needs it.

Most important for tax professionals, it frees tax departments from dependence on enterprise software — while still allowing them to work together smoothly.

Service-oriented architecture means —

Easier Integration

The greatest strength of SOA is its ability to integrate systems and reuse software that you or others have already built.

Most corporate IT environments are a hodgepodge of systems assembled over years of acquisitions, divestitures, and internal growth. Setting corporate standards for hardware, operating systems, database structures and other parameters has been a daunting — if not impossible — task.

In the past, integrating heterogeneous systems — either within companies or between companies and their business partners — typically required a difficult-to-develop proprietary interface that was vulnerable to breakage every time one of the constituent systems changed.

SOA makes integration possible without having to re-invent the wheel for each new project

SOA lets businesses bridge communications gaps between custom or packaged applications written in different programming languages, developed by different vendors, or running on different platforms — from mainframes to Windows-based servers — and different operating systems.



More System Flexibility

Many companies support multiple ERP order-entry systems, which all too often have required them to maintain multiple instances of sales and use tax software and data — each running a custom interface.

In contrast, SOA allows multiple systems to access tax services running on a platform-independent, Web-based server.

ERP, billing or eCommerce systems across the organization access the centralized tax service through their existing Intranet, eliminating the need for costly hardware setups and software updates and patches to multiple instances of the tax software.

Tax data can be maintained independently from the tax service, so it can be more easily accessed, updated, and maintained, allowing for more comprehensive data maintenance and reducing dependence on IT.

Tax calculation and taxability decisions can be made uniformly and consistently across the entire organization. Tax data from multiple systems or locations can be consolidated for filing transaction tax returns.

And because SOA allows the deployment of tax software separately from the business-system, ERP system upgrades no longer require lockstep tax software upgrades.

Speedier, Lower-cost Implementation

The adoption of service-oriented architecture can dramatically lower the cost of implementation by reducing the need for systems integration.

And the relatively shallow learning curve for SOA development has already spawned a substantial base of programmers, so finding talent is less problematic than in other new technology areas.

Greater scalability

The deployment flexibility of service-oriented architecture allows for greater scalability and overall performance.

Because SOA is distributed across multiple servers, services can move around the network transparently. This permits longer uptime while allowing the underlying infrastructure that the services run on to be re-sized or upgraded. Additionally, multiple instances of the same service can run concurrently to handle increased load.

In this way, SOA finally delivers the scalability benefits that distributed systems have long promised, while keeping the technology and implementation standards-based.



Lower total cost of ownership

Service-oriented architecture delivers ROI by lowering both the cost of integration and the cost of maintenance.

Today, programming a link between two custom applications can cost as much as \$1 million. Even with the expense of retraining developers in SOA technologies and converting existing applications to SOA, most analysts believe service-oriented architecture will deliver long-term positive ROI, as multiple disparate applications are combined into a handful of SOA services.

In the near term, SOA will allow companies to maintain fewer instances of software and allow for process centralization

In the mid term, if businesses can extend the lifespan of existing solutions instead of having to write new ones and can also use lower-cost SOA developers, ROI can grow quickly, through reduction of costs associated with IT consulting and systems integration.

An IT model closer to your real business needs

SOA drives a new, more productive relationship between your department and IT.

Rather than throwing your needs — tax accruals on purchases, for example — “over the wall” to IT in the form of a requirements document, SOA enables the tax department and IT to work collaboratively to fit the technology solution to the business process.

With service-oriented architecture, the technology becomes a change agent — not an impediment to change. By utilizing this flexible technology, businesses are able to incorporate newly acquired companies or divisions more effectively and efficiently than in the past.

SOA glossary

SOA can be a confusing alphabet soup of acronyms at first. Among the terms you’ll hear most frequently are those referring to the standards on which SOA is based —

- **XML (Extensible Markup Language)** — a standardized method of structuring text that describes data, XML allows programmers to write tags to identify

SOA in Practice

The College Board is a not-for-profit association of more than 4,700 schools, colleges, universities, and other educational organizations that serves students and parents in college admissions, guidance, assessment, financial aid, and enrollment, through programs including the well-known Scholastic Aptitude Test (SAT).

Bahar Limaye, Application Architect for the College Board, credits SOA with reducing the cost and complication of maintaining their business applications, while increasing control. “Historically,” he says, “The College Board outsourced all of its software development to third party vendors. We had many applications that span consumers, professionals, and institutional customers, each with its own authentication mechanism, customer data, and e-commerce functionality. Payment processing, tax, fulfillment, personalization, and financial reconciliation were handled differently in each application – and all too often we were losing money by paying different fees across vendors, maintaining duplicate information, and supporting different processes.

Four years ago, however, we decided to take back control over our software and to create an internal, shared-services IT organization. It was important for us to build this function from the ground up on SOA services – including a common login, e-commerce services, enterprise data service, messaging service, and taxation – that could be leveraged by vertical applications.

With SOA, we have tighter control over our generated revenue and can automatically reconcile financial transactions daily. And we are no longer at the mercy of third-party vendors when a product enhancement or change is necessary.



information in a document and place it in context. While the overall structure of XML is standardized, many industry groups are now defining their own industry-specific XML dialects. The shoe industry, for example, could adopt one tag to represent shoe size, another to represent shoe color, etc.

- **WSDL (Web service Definition Language)** — an XML-based description language, standardized by the W3C, that defines the rules for locating SOA services, integrating them into applications, and communicating between them. WSDL describes how an application contacts an SOA service and asks it to perform a task and return a result.
- **SOAP (Simple Object Access Protocol)** — an XML-based messaging technology, also standardized by the W3C, that describes how application objects — discrete packages of data or business logic — can be packaged and sent to an SOA service. SOAP defines what the “envelope” looks like and where to place the application’s data.

WSDL and SOAP work together to provide a standard way of accessing objects on systems that support the standards, making it possible for multiple business applications to communicate with the service-oriented architecture in complex, real-time transactions — such as authorizing credit cards, checking inventory, placing an order, calculating tax, and charging the customer.

The other set of initials that makes SOA possible is —

UDDI (Universal Description, Discovery, and Integration) — public or private registry applications, deployed internally, hosted externally, or published on the Internet, that allow software to discover what SOA services are available and to locate the WSDL that describes them.

CONCLUSION

Service-oriented architecture represents a distinct and dramatic shift in how businesses use computing technology — paralleling earlier shifts from mainframe to minicomputer to PC to client/server models.

Based on familiar and ubiquitous standards and technology — and employing a highly distributed architecture — service-oriented architecture offer tax professionals and their companies a route to software development that is faster, easier, more flexible, more scalable, lower in cost, and more relevant to their businesses than older models.

But, as with all technological change, the companies that will reap the most benefit will be those in which business units and support organizations — including the tax department — stay informed, collaborate in IT decision-making, and focus on the business issues.



What Every Tax Professional Should Know About Service-Oriented Architecture

ABOUT VERTEX INC.

Vertex Inc. is the leading provider of tax technology products and process management services for more than 10,000 customers worldwide. Vertex technologies and services help companies streamline tax compliance processes, as well as leverage information to discover new strategic tax savings that enhance decision information across every major line of business tax including income, sales, consumer use, value added, communications, and payroll. To serve its customers, Vertex works in partnership with leading software and service providers.

Founded in 1978, Vertex is a privately held company that employs 600 professionals at its headquarters in Berwyn, PA, and offices in Atlanta, Chicago, Dallas, Phoenix, Sarasota, and Washington, D.C.

For more information about Vertex, visit our Web site at vertexinc.com.