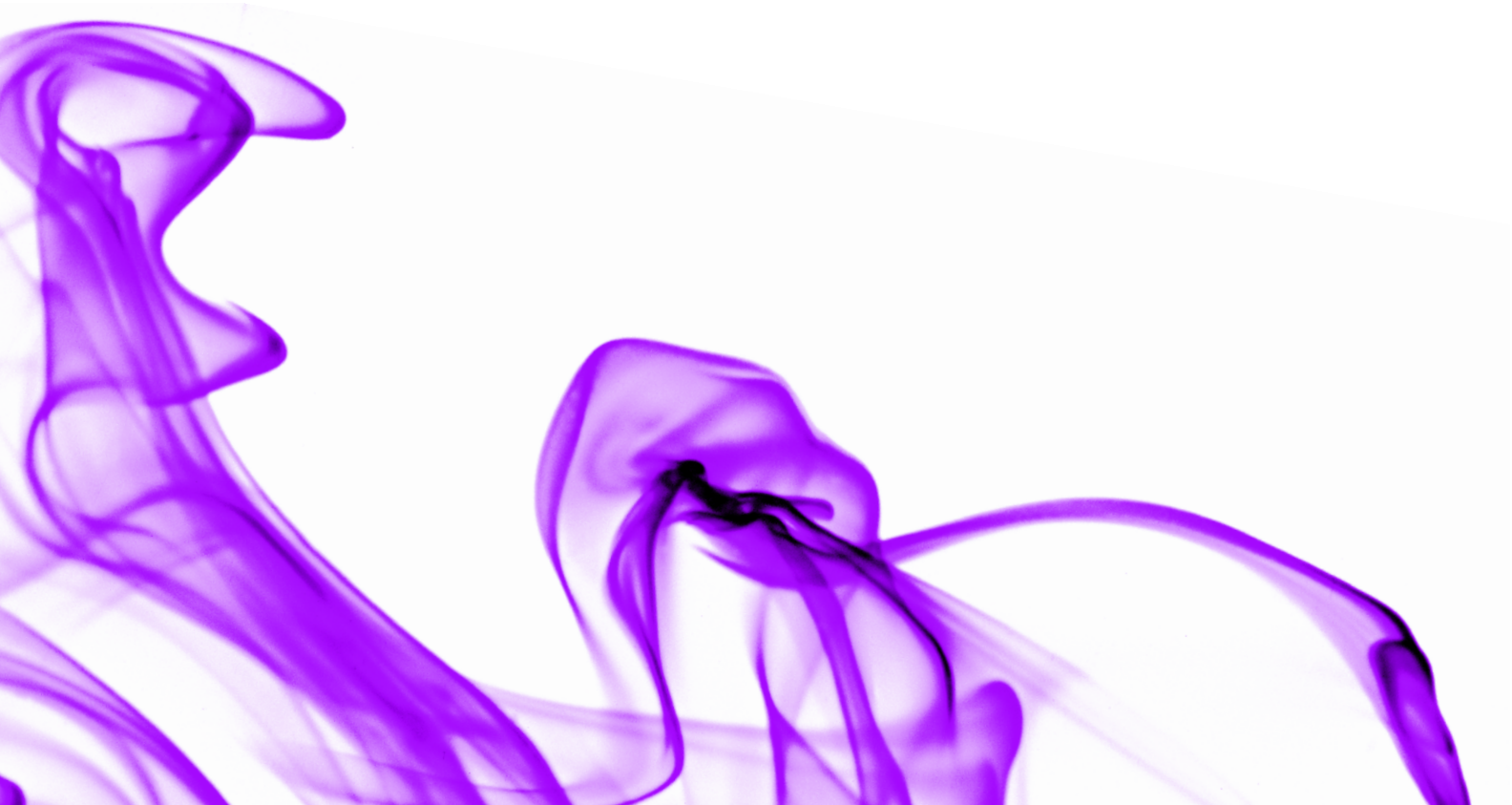
BEA White Paper

# The Move Toward Shared Services

## An Examination of the Business Models and IT Trends Driving Public sector Adoption of Shared Services



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# Overview

Shared Services are composite applications made available via technologies such as Web services, which simultaneously reduce costs and enable more dynamic results. They bridge legacy and newly developed applications across diverse organizations to provide the public sector with more efficient means of serving civilians, employees, business partners, or any other end-user base.

This white paper explains the growing business and operational IT trends that are causing government bodies to offer Shared Services. In discussing this important trend, the paper moves from outlining the business case for Shared Services toward a discussion of architectural control points and service features.

# Do more with less

In its efforts around the world, BEA has noted two primary drivers for the adoption of Shared Services in most public sector organizations, regardless of size (national, provincial, or local) and scope (civilian services, intelligence, or defense). Specifically, government organizations adopt Shared Services to either generate significant increases in service quality or achieve dramatic cost savings, or a combination of the two. In short, they are trying to do more with less.

To achieve these goals, governments can't afford to simply build new IT infrastructures. They have to bridge old legacy infrastructures to today's world and beyond, and do so in a manner that makes government services better and more efficient.

Shared Services result in better services and cost savings, and to implement a Service-Oriented Architecture (SOA) that facilitates this result, public sector organizations require a new way of thinking about IT infrastructure, not only technically but organizationally. Shared Services leverage a world of multiple software vendors that build systems, which create interoperability and use each other's capabilities. By interoperating and mapping an SOA approach across IT systems, organizations achieve dramatic results. This shifts the old IT model of proprietary systems that cannot be transformed from older generations of technology to a flexible, shared model that leaves room for scalable, incremental growth. With flexibility for the future, government organizations are no longer beholden to legacy systems, nor are they faced with a step-function such as the need to remove large data systems all at once.

A recent Accenture white paper states that, "Shared Services enables high performance… The end-result is improved outcomes at a better cost for the citizens and businesses governments serve and, ultimately, better public sector value."[1]

Examples of trendsetters using BEA SOA products and practice methodologies to implement Shared Services can be found around the world. Accenture has ranked Canada as the number one "eGovernment" country in the world for four years running, and one of the major reasons Accenture cites to back this high rating is the Canada Revenue Agency, a longstanding BEA WebLogic® customer, for its Shared Services efforts.

1. Accenture, "Driving High Performance in Government: Maximizing the Value of Public sector Shared Services."

Singapore, a country of roughly 3 million, spends over $400 million per year on IT (2004 figures), a significantly higher per-capita spend on eGovernment transformation than most of the world's countries. It's no surprise that its citizens rank with those of Finland and Canada as the most eGovernment-connected in the world. Singapore embarked on its technological transformation in 1980 and launched its first eGovernment portal in 1999. BEA has been a cornerstone of Singapore's eGovernment transformation, and the BEA WebLogic platform has been the basis for Singapore's Shared Services program across both civilian and defense platforms, from the Ministries of Finance and Housing all the way to the Ministry of Defense.

In the United Kingdom (UK), a government efficiency study[2] was the precursor to a new public sector-wide transformational IT strategy that is advocating a Shared Services culture. The goal is to meet citizen demand for greatly improved services through better use of IT data across organizations. During his time as government CIO, Ian Watmore said that, "Government must move to a Shared Services culture—in the front office, in the back-office, in information, and in infrastructure—and release efficiencies by standardization, simplifications, and sharing. …"

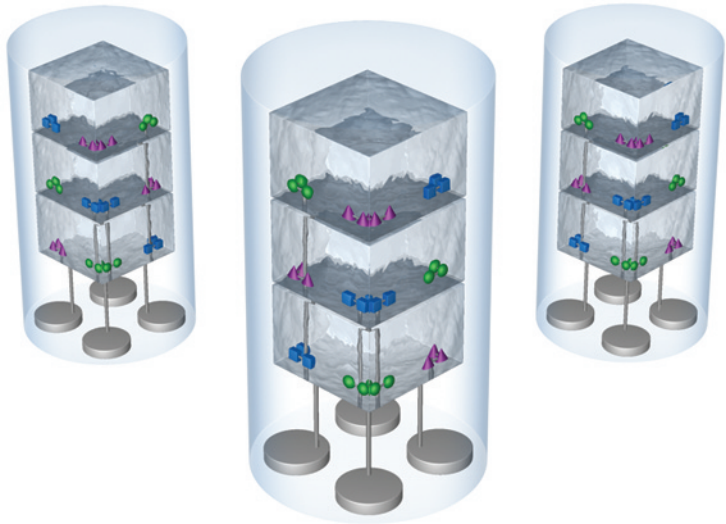


Figure 1

Today's world of frozen and siloed IT assets.

2. "Releasing resources to the front line: Independent Review of Public Sector Efficiency," Sir Peter Gershon, July 2004.

Today, with government encouragement from the Prime Minister and the Cabinet Office supporting the initiative, departments and agencies are actively moving to adopt Shared Services.

As one of the many agencies meeting this challenge, the UK's Department for Transport (DFT) is working toward a Shared Services infrastructure. DFT's Driver and Vehicle Organization (DVO) has three agencies—the Driving Standards Agency (DSA), the Vehicle Operated Services Agency (VOSA), and the Driving Vehicle Licensing Agency (DVLA), which are responsible for driving tests, vehicle registration testing, and driver licensing, respectively. These interrelated organizations have much in common and are actively engaging in developing Shared Services to become citizen-centric rather than functionally focused, providing a single face to UK citizens through a unified portal and the ability to transact as if the three agencies were a single government agency.

In the United States, the Veterans Health Administration (VA) oversees about 237,000 professionals who provide healthcare to over 5 million veterans through 157 hospitals and more than 850 community clinics. But the costs associated with a primarily paper-based system and a less-than-affluent constituency were overwhelming the VA. In response, the VA launched its MyHealtheVet gateway for veterans' health benefits and services.

The VA, through application of advanced IT, has used MyHealtheVet (MHV) to reduce costs, improve healthcare quality, reduce the frequency of medical errors, advance the delivery of appropriate, evidence-based medical care, facilitate greater coordination of care among different providers, and increase privacy and security protections for personal health information.

The VA developed MyHealtheVet to evolve their services approach away from the older, facilities-centric approach to bidirectional communication. The new system provides online access to trusted health information, links to federal and VA benefits and resources, a Personal Health Journal, and the VA prescription refill program. In the future, MHV registrants will be able to view appointments, co-pay balances, and key portions of their VA medical records online, and much more. MyHealtheVet has become a powerful tool to help veterans better understand and manage their health.

These are just four examples of a larger trend—the shift to an SOA-based, Shared Services model—that is occurring across bureaus, agencies, and in some cases governments worldwide.

# The BEA view of Shared Services

Working on public sector Shared Services implementations around the world has provided BEA with a unique view of this architecture's evolution. One thing has become certain: Shared Services is not just about a systems change or about connecting separate organizations. It requires the development and use of standard, re-engineered processes in the business as well as in the Shared Services operations themselves.

By agreeing on a government organization's business objective—providing a set of common services for end-users across organizations—agencies empower themselves to provide Shared Services. Agencies and departments are focused on matching IT with business needs, on the reallocation of funds and resources to succeed, and on creating organizational behaviors and structures that are synchronized with service provisions.

For Shared Services to succeed, BEA believes in the development and reuse of standard, re-engineered technological processes. These processes refocus IT resources on the services provided to the end-user, rather than on the organization's coinciding function. This means taking complex, disparate applications and technologies and organizing them into flexible and manageable infrastructures for reusable services.

Resources may need to be reallocated to help the SOA succeed. Agencies may need to assign staff dedicated to intra-agency coordination based on a reference enterprise architecture (EA) and predefined best practices for implementation of the EA. IT resources may be reallocated from proprietary custom code to more "off the shelf" platforms that enable cross-connectivity between systems, networks, and organizations.

Furthermore, those resources may be organized into centers of excellence where IT professionals in the supported stakeholder organizations would be managed by a new set of business objectives, focused on and rewarded for the use of their services, and ensure that those services meet their organization's business needs. In essence, they would move from being rewarded for building large developer teams and their own self-supporting data centers toward focusing on alignment with their front-office business peers and ensuring that IT services are delivered to them at a preset service level.

Additionally, the Shared Services model means developing organizations that support those services. It's not enough to simply implement an IT system for services; Shared Services also means the adoption of key principles for the implementation, ongoing governance, and management of those services. Economies of scale occur by consolidating, collaborating on, or providing access to the outsourcing marketplace. Government bodies need to develop service management structures and capabilities, including measurement techniques, service level agreements (SLAs), and control through information and communications technology (ICT) functions. In some cases, restructuring must occur to enable the agency's new SOA and mission focus.

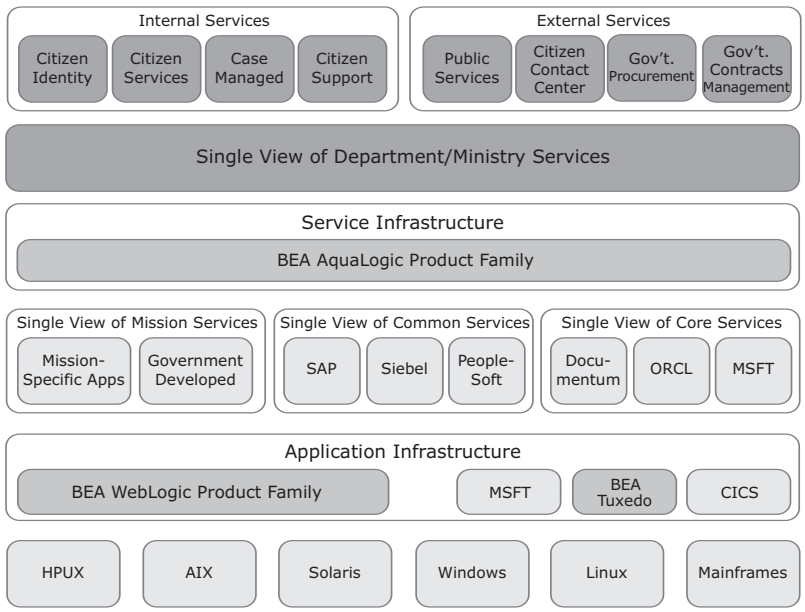



Figure 2

Shared Services for governement enterprise architecture.

The drivers of Shared Services adoption are better services at a lower cost. That means building a flexible organization that can achieve new demands by leveraging existing resources instead of simply replacing systems, or outsourcing existing systems through an integrator or an outsourced model. Shared Services represents a new model: the intelligent re-engineering of past experience and function to create a widely available, better end result.

Outsourcing flexibility is greatly improved following successful completion of the re-engineering process. An SOA allows for creative and efficient combinations of internal department, external government partner, or outsourcer/systems integrator-based implementations.

# Open approach to Shared Services

The heart of the BEA approach to Shared Services is flexibility. BEA government and supporting systems integrators build services structures around reusable services rather than applications. That means the use of open and independent platforms that are "future-proof." Future-proofing requires a standards-based approach that allows interoperability and prevents government bodies from getting "locked in" to one vendor. Additionally, service structures need to be scalable, growing with their communities of interest while providing government-grade security.

For BEA, Shared Services begins with an SOA approach to information technology, reconfiguring and service-enabling existing enterprise IT assets where possible, building out new ones on new platforms as needed, and integrating all available platforms to meet overall end result targets. Based on this model, using a combination of product suites (BEA WebLogic, BEA AquaLogic™, and BEA Tuxedo®), organizations can move away from siloed applications and data and toward services. There are several critical benefits to adopting an SOA, including:

- Improved productivity, agility, and speed for both front-office government functions and IT
- Delivery of services faster, and in a fashion more aligned with front-office government functions
- End-users (from citizens to warfighters) are provided with optimal experiences through better, quicker services.

In the past, approaches to IT have been proprietary, often requiring the development of large, sprawling ERP solutions or custom code provided by hired software engineers. However, with already-precious resources becoming even scarcer, the days of proprietary systems are coming to an end. Economic pressure and demands for improved functionality create the need for solutions that can produce results using as much of the existing infrastructure as possible.

BEA provides a scalable enterprise architecture that lets customers keep their current investment in legacy systems while ensuring a future-proof, robust environment for delivering services. The BEA SOA architecture and Shared Services implementations assume that it's no longer viable to build a system that will only be replaced by another system, which will itself eventually be replaced. Instead, the BEA Shared Services architecture extends legacy applications by removing the limitations associated with siloed systems—reducing overlapping and redundant functionality.

With BEA AquaLogic, an SOA allows for new Web-enabled applications and services (via BEA WebLogic) to be offered in conjunction with the extension of legacy applications (via BEA Tuxedo). A new, extended IT model is

created, allowing for interoperability from yesterday into tomorrow. The end result is less IT investment over time, plus independence from any particular software vendor. This means government bodies are no longer at the mercy of their underlying platforms or packaged applications, nor are they faced with the same hurdles in working across government agencies where peer organizations may have invested in very different platforms and packaged applications.

This new, flexible, Service-Oriented Architecture helps to create an IT environment that can achieve multiple objectives. New pieces can be added through the use of standards like XML, messaging protocols like JMS, MQ Series, DCOM, and Xquery; Schema; and the use of the LDAP and Active Directories, data standards catalogues, compliance to the e-gif body, and interoperability working groups. More importantly, new organizations and services can be added, creating a truly scalable infrastructure.

Because BEA has a vendor-neutral philosophy, our consultative approach to Shared Service implementations is meant to build the best result possible for the new SOA. That means maximizing the IT department, and its support in systems integrator and ISV partners, to achieve the best possible implementation. As a trusted partner, fulfilling the government's mission is our primary focus.

This new services-oriented approach can be applied to almost any part of public sector governance. Here are just a few instances where government bodies are considering Shared Services:

## Defense

Using Shared Services, military organizations can generate significantly quicker decisions on a variety of operations from supply-chain management to campaign decisions, all while increasing information-sharing efficiencies across the military establishment. According to the DS3 Working Group, "The benefits of Shared Services are rich in their promise to expand flexibility of capability, to increase speed of access, and to enable real time battlefield and threat information."[3]

A Shared Services-enabled military is one that is nimble, more agile, and better able to handle threats. A Shared Services approach is also able to reduce development time and lifecycle costs, and improve security through certification and accreditation reuse.

The United States Department of Defense (DoD) wanted to maximize the usefulness of its intelligence capabilities to benefit all its land-, air-, and sea-based warfighters. To achieve this goal, DoD is implementing a program called Distributed Common Ground Systems (DCGS) to link military-intelligence assets in a unified, cohesive manner, and then make their intelligence available across the battlefield and to units around the world. In this way, DoD is using DCGS to move its systems toward a net-centric warfare model.

Achieving DCGS means integrating hundreds of disparate, incompatible systems for the collection, analysis, and distribution of data across all military branches. This integration backbone is founded on a BEA WebLogic SOA implementation that creates a grid of networked systems, and in turn allows individual systems to become nodes on DCGS. The combination of the scalable BEA WebLogic system and DoD's strong organizational governance are developing a standardized DCGS that's compatible across military platforms.

3. Data Sharing and Service Strategy (DS3) Working Group, "Facilitating Shared Services in DoD," January 17, 2006, ii.

The results are already coming in, with useable information forwarded to commanders faster than ever before. Near-real-time information delivery increases mission effectiveness, reduces confusion and friendly-fire incidents, and protects the lives of U.S. warfighters. Additional DCGS benefits include savings of 33 percent of the normal costs for comparable applications, thanks to the use of an SOA architecture, and project schedules that have been cut in half.

## Central government

Civilian government must meet the needs of the citizen, providing a wide range of services from economic development and revenue collection to law enforcement and judiciary functions. Services-oriented structures offer civilian government organizations the ability to flatten their service offerings across departments to offer a unified user experience.

Civilians and beneficiary organizations can receive one-stop services via federated portals that unify a variety of applications and services. Agencies can build these services using an open system that provides the ability to grow flexibly via existing infrastructure, which in turn dramatically reduces costs. In the end, public service organizations are better enabled to serve their constituencies via a Shared Services model.

In China, the Ministry of Labor and Social Security (MOLSS) needed to update an old social security and insurance system that is complicated and inconsistent across central, provincial, and municipal governments. China needed a complete platform that could apply Shared Services at all levels and also reflect a package of evolving policies in a consistent and shared manner. BEA offered China a unified platform product that included BEA AquaLogic, BEA WebLogic, and BEA Tuxedo, along with a BEA consulting team that invested significant effort in co-developing the business solution and processes.

Now China finally has a standard platform to consistently operate its social security and insurance functions at all levels of government. A unified social security platform that includes all business claims and approval processes has been implemented. Currently, China's central government is in the process of promoting MOLSS Shared Services solution usage to all provincial and local governments.

## Local

Governments at the provincial, state, and/or local level constantly encounter demands to improve services while lowering costs, and in some cases end up completely outsourcing IT functions. With 54 percent of expenditures going to IT integration services, cost reductions are a constant source of IT demands, according to the Gartner Group.[4]

Using a Shared Services implementation, local governments can contain costs by both reducing IT infrastructure spending and creating a flexible architecture that is not vendor-specific, allowing for future growth. Furthermore, revenue generation and maximization are better enabled, and citizen services like child welfare, medical services, and other case-oriented needs are provided in a more holistic fashion.

4. Gartner "United States State and Local IT Spending Forecast 2005–2008," October, 2005.

In Norway, Oslo's City Council needed to increase its efficiency in delivering citizen-centric services. The Council deployed the BEA WebLogic solution to join up 55 district authorities and agencies and their 250 services. This process required the integration of numerous standalone back-office systems and streamlined services. Within one year, more than 200 of Oslo's services were integrated online, and more than 30,000 requests and applications from civilians were made in 2005. Oslo citizens enjoy the benefits of a wide range of services via one Web site, including building construction permits, childcare, and complaints regarding parking tickets.

Halfway across the world in the U.S., the city of Chicago, Illinois has implemented a similar Shared Services platform within its Public Building Commission (PBC). The PBC garnered data from four disparate systems and needed to both link these data sources and provide a unified, consistent view into project information for PBC executives, project managers, contractors, architects, and other internal and external personnel. By providing visibility to all data using a BEA WebLogic-based portal, the PBC improved planning, reduced its overhead, increased efficiencies, and expedited problem resolution.

"This portal is really about control and accountability," said Ben Campney, director of information technology for the PBC. "We have a responsibility to protect the interests of our citizens by maximizing the return on every tax dollar we spend. This portal helps us do just that. It makes us better managers and more efficient building planners."

Chicago has gone on to leverage the best practices and successes it has had in using BEA WebLogic as the basis of the PBC's city contractor management program. It now uses BEA AquaLogic to connect existing platforms and develop new services across multiple Chicago agencies. One project, similar to Oslo's, is a parking-permit program for congested Chicago neighborhoods that has increased revenues for the supporting agency by 20 percent.

# Tuning Shared Services for maximum effectiveness

With a unique vendor-neutral environment, government bodies can control costs and hasten delivery of new service functionality at better performance levels. SOAs enable governments to manage all of their data, platform, and application resources to provide these results. Resource management occurs through the development of architectural control points in the SOA.

BEA identifies three primary architectural control points, each progressively more technical and sophisticated, matching the evolution of an organization's SOA and its ability to fully integrate existing platforms, transform its business processes, and build Shared Services. The control points are federated portals, shared data services, and the delivery of applications as federated services between and across government organizations. BEA's experiences over the last 10 years have demonstrated that, typically, many customers approach these three control points in a certain sequence.

## Federated portals

In essence, the federated portal establishes a Web interface on top of several disparate applications and data repositories to present end-users with a single window into government services. Often, the underlying applications remain siloed for quite some time and are gradually joined up through shared data services and the development of composite applications.

However, even without changes to the underlying silos, these federated portals become an efficient way for government employees, military personnel, and civilians to find necessary services when they are not sure which government entity provides needed services, or when more than one entity must be contacted. A wide range of government federated portal examples built on BEA WebLogic Portal® and BEA AquaLogic User Interaction would include the Belgian National e-Government portal (run by FEDICT), the Defense Finance and Accounting System (DFAS) employee portal, and the BEA WebLogic Portal used in certain node configurations in Distributed Common Ground Station (DCGS) platform implementations.

There are subtleties that must be considered in selecting the right portal to federate back-end systems. Here are a few examples:

## Average and event-driven peak transactional load considerations

Traffic can be heavy in different circumstances. In the case of Firstgov.gov, the U.S. government's pan-departmental portal run on the BEA WebLogic platform, citizens from a country of over 270 million residents, with one of the world's highest Internet penetrations, are simultaneously accessing Firstgov.gov to find everything from their local Social Security office to how the new Medicare prescription drug program works and where to select a plan.

Even in smaller countries, there will be periods in which peak transaction rates will far exceed average simultaneous loads—for example, during elections (particularly if the portal is citizen-facing and handles posting results, such as the Ministry of Justice portal in Finland, which runs on BEA WebLogic Enterprise Platform including BEA WebLogic Portal).

## Natural language queries for citizen services

Increasingly, search engines allow for semantic translation of phrases representing a user's questions, such as "I want to open a new restaurant." Such a query should generate a series of questions for the aspiring restaurateur, which in turn generate forms for him/her to fill out in order to obtain the requested service from government.

This feature is particularly helpful when forms are needed from several agencies—for example, the fire department for seating capacity and fire-safety rules, the small business administration for a business license, and the city and/or state alcohol board for a liquor license. Scenarios like this are handled by the U.S. city of Raleigh, North Carolina through a BEA AquaLogic User Interaction federated portal.

## Flexibility to handle existing platforms and resources

In many cases, federated portals must be built to handle siloed heterogeneous platforms across multiple organizations where content must be transferred between .NET, J2EE platforms from BEA, IBM, or Oracle, or others on several UNIX variants and Windows platforms. In certain cases even the federated portal itself must reside on multiple platforms. A BEA AquaLogic User Interaction portal has been used in cases like this, in a very out-of-the-box, compositional manner. In other cases, Java developer resources may be leveraged to build and tailor a highly scalable, mission-critical federated portal based on BEA WebLogic Portal, running on BEA WebLogic Server®, to support front-end composite applications that can be dynamically upgraded and clustered in a WAN environment.

## Identity management and single sign-on capabilities

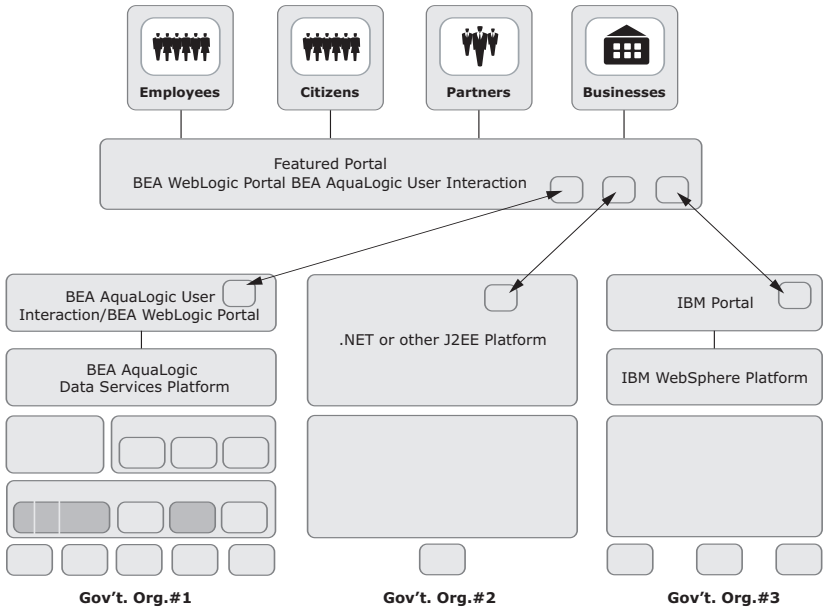
Often, particularly for employee or warfighter federated portals, a major yet relatively straightforward gain in efficiency can be made by creating a single front-end authentication and authorization step. This provides access to back-end systems and applications based on end-user roles and responsibilities that are stored in a meta-directory. BEA has designed its portals to handle that front-end identity management based on LDAP and Active Directory.

## Shared data services

Implementation of this architectural pattern requires a more sophisticated SOA due to the need to integrate disparate data in legacy and newer systems. Integrating data allows an SOA-enabled public sector enterprise to provide new applications or integrate existing applications to provide improved services. This architectural pattern also requires more cross-functional and cross-organizational planning. Prior to designing or implementing any changes to the system, key IT and front-office managers across the affected government agencies must review the processes that access and share data.

Figure 3

Shared Services architectural point 1: Federated portal scenario.



The BEA AquaLogic Business Service Interaction product provides a toolset to help redesign the business process in a graphical, compositional manner that then implements its recommendations in industry-standard, XML-based protocols. The results of this tool are used to orchestrate a business process across the monolithic silos of data, processes, and user interfaces that exist today. This is completed in conjunction with the BEA software's integration products for the execution of shared data services.

The BEA WebLogic Integration product provides a tight coupling of BEA WebLogic Server to EDI and third-party packaged applications through JCA, SOAP, and other industry-standard protocols. The use of BEA WebLogic Integration enables Java programmers and integrators to rapidly optimize tight integration of heterogeneous government platforms and BEA AquaLogic Service Bus, the BEA Enterprise Service Bus (ESB), which has received numerous industry accolades for its groundbreaking capabilities. BEA AquaLogic Service Bus allows an SOA to be configured (not coded) in order to interoperate monolithic services by providing not just dynamic routing and dynamic transformation capabilities, but also complete service management capabilities, allowing the SOA to provide enhancements and cost savings to the O&M aspects of the solution.

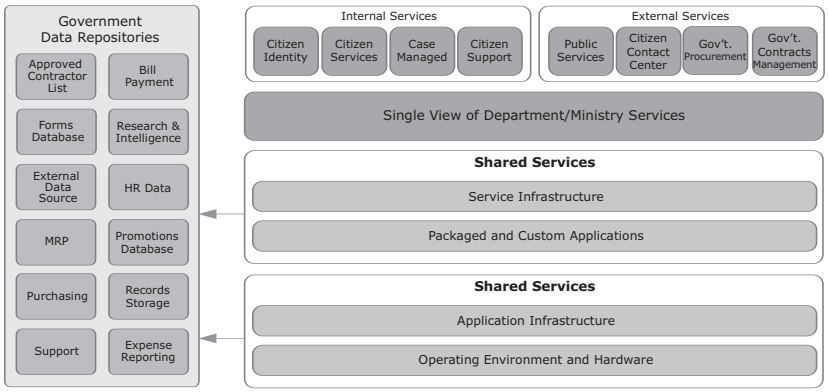



Figure 4

Shared Services architectural control point 2: shared data services.

BEA begins several initiatives with this type of widespread, more integrated implementation. As in the federated portal model, BEA WebLogic and BEA AquaLogic are used to provide new services and interfaces for the end-user. The first new step occurs with the unlocking of data and applications in old legacy systems that are critical to creating improved service delivery. BEA uses BEA Tuxedo to unlock enterprise legacy applications and extend them to the SOA, while delivering unlimited scalability and standards-based interoperability for future expansion. "Legacy extension" to the present and the future occurs through mapping of existing C, C++, and COBOL solutions to a high-performance, highly reliable messaging engine that provides synchronous, asynchronous, and conversational messaging APIs. Using data-dependent routing, BEA Tuxedo can route messages based on their context and prioritization. BEA WebLogic Tuxedo Connector ships with BEA WebLogic Server 9.1, the latest version, and enables tight integration of BEA WebLogic with BEA Tuxedo.

While BEA WebLogic Integration and BEA Tuxedo provide a programmatic approach to the integration of disparate data sources, BEA AquaLogic Data Service Platform integrates heterogeneous data sources in message- and event-driven format at a higher level. This less intrusive, more compositional approach can support XQuery, JMS, MQ Series, and other protocols to share data across everything from legacy platforms to Microsoft .NET platforms. Furthermore, BEA AquaLogic Data Service Platform provides greater data-service security, scalability, and reliability. BEA AquaLogic Data Service Platform provides caching authorization and transaction services, and automates the creation and maintenance of both read and updated data services. BEA AquaLogic Service Bus furthers the process by allowing enterprises to integrate data from all systems to deploy and simplify SOA management. Services are built faster and more cost-effectively than ever before, achieving the vision of SOA. In real-world examples like that of Chicago, both BEA WebLogic Integration and BEA AquaLogic Data Service Platform are used, each for its strengths and applicability to the specific challenges faced.

## Applications delivered as Shared Services

The final and most sophisticated type of architectural pattern is the federated services sharing architecture that may be implemented between disparate government organizations. This occurs in situations where government organizations that have different missions—but information, applications, or services that may be used by common customers such as civilians, other agency executives, warfighters, and others—pool their resources and integrate their platforms through implementation of an SOA that includes one or more of the following:

- A federated portal through which subscription services are consumed (described in the first architectural control point above)
- An ability to connect to back-end applications and expose them as services through the appropriate combinations of the ESB, BEA WebLogic Integration, BEA AquaLogic Data Service Platform, and applications running natively within BEA WebLogic Server or BEA Tuxedo (described in the second architectural control point above)
- An ESB that enables multiple bus formats to be joined and that acts as a network application and data switch between disparate heterogeneous platforms and packaged applications
- A service registry that, when combined with the ESB, offers a means of publishing, discovering, and subscribing to applications and data as services across all government organizations participating in the integrated service
- Security enhancements that enable a uniformly high level of security by decoupling security from application APIs and instead offering it as a fine-grained set of services.

The first two areas that assist in delivering federated services are described above. Here we will briefly describe how the remaining three elements support federated services. However, if the reader has a keen interest in learning more about the underlying technical features and details of SOA implementation, we recommend they read the BEA technical white papers on SOA that can be found on *bea.com/soa/library*.

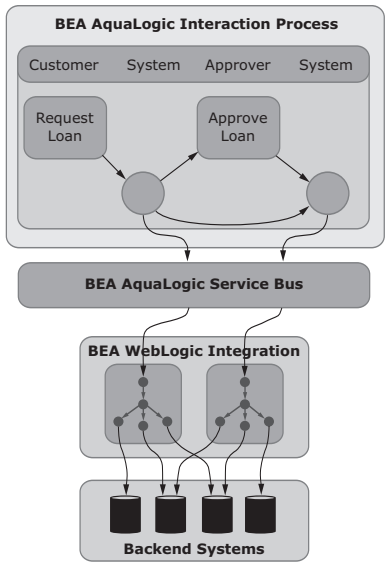



Figure 5

Typical BEA AquaLogic and BEA WebLogic platform scenario for Shared Services:

BEA AquaLogic Interaction Process
- Human to human
- Easy assembly of pre-built components

BEA AquaLogic Service Bus
- Service Infrastructure

BEA WebLogic Integration
- System to system with human exception handling
- High performance, reliable, transaction-oriented

Backend Systems

The core of a federated services SOA is the ESB. In very large deployments, either due to heavy traffic of a given type or in combination with a significant number of different data transformation types being handled simultaneously, the ESB can be the stalling point if it is incapable of handling heavy loads or is susceptible to debilitating failure due to transactional errors. When considering an ESB, government organizations must keep in mind that the fastest way to see integrated communities experience defections, or the reluctance of potential planned organizations to incorporate, is for the ESB to crash or be incapable of guaranteeing agreed-upon levels of service based on SLAs. Based on BEA's experience in developing the industry-leading BEA WebLogic Server platform, well known for its high reliability, scalability, and performance, BEA has repeated the implementation of these design features in the BEA AquaLogic Service Bus. For example, the BEA AquaLogic Service Bus is capable of running in a clustered mode and a WAN environment analogous to that of the BEA WebLogic Server.

To augment an ESB like the BEA AquaLogic Service Bus, a federated, services-sharing architecture uses a management tool like BEA AquaLogic Service Registry to provide a centrally managed, reliable, and searchable location for service descriptions. Service registry management allows for new services to be published, discovered, and consumed, and uses metadata about services to provide everything a customer needs to know about using a service. Services can be provided to the service registry from a variety of organizations.

For example, if an international intelligence agency has a service that provides information on inbound security threats, it could publish that service on a registry, enabling both homeland security and local law-enforcement officials to access it. Using strengthened security measures achieved through BEA AquaLogic Enterprise Security, such services offer granular access control, data redaction, and data access auditing, all with the addition of shared security infrastructure and services deployed SOA-wide to increase security efficiencies.

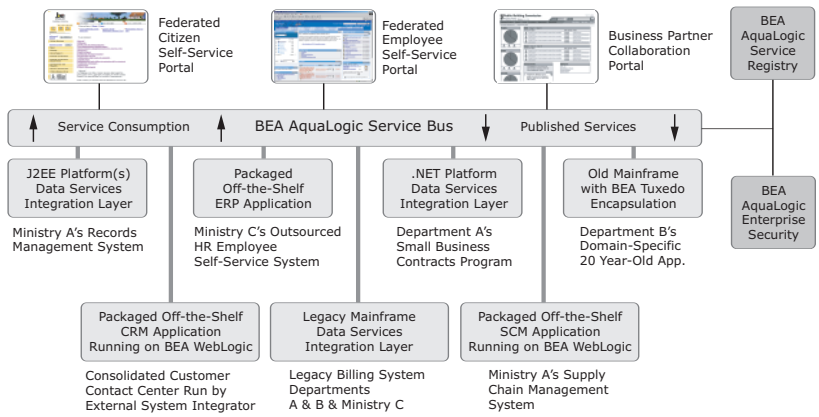



Figure 6

Shared Services architectural control point 3: federated application service delivery.

# The features and benefits of SOA

An organization that implements an SOA stands to garner many new features to better serve its communities of interest, and will also benefit from the many efficiencies and cost savings available. Here are some examples of SOA features and assets for public sector organizations that BEA clients have experienced:

## Faster delivery of new services and applications

Application development is streamlined using a composition framework that's based on metadata and graphical tools for content, knowledge, and business-process management, such as those found in the BEA AquaLogic platform. In this way, composite applications are built on existing services without requiring new code. Of course, SOA can be implemented using a heavyweight code- and developer-focused model, but where possible, faster and less expensive means should be used in order to do more for less. Heterogeneous environments require the appropriate products and associated practices as catalysts to efficiently implement architectural control points for access to packaged applications on disparate platforms, and the transformation and update of data across multiple data stores associated with those applications.

## Flexible, scalable services built on any platform

Services can be deployed to form a services backbone regardless of the original platform they are built on. Common standards-based service structures, composed once, can be leveraged anywhere and anytime through Web service encapsulation. BEA Tuxedo does this for Cobol and C/C++ based applications, BEA WebLogic for J2EE-based applications, .NET for Microsoft applications, and so on. BEA AquaLogic then acts as the glue that brings together all Web service-enabled components. Through BEA AquaLogic, services can be layered on one another and interconnected, creating wide networks of information and applications that can be shared across organizations.

## Independent service infrastructure

Government organizations are no longer beholden to one software platform or to a single integrator's custom code. Using a unified data services layer, unified security administration and configuration, and unified ESB and Web-services management, government IT departments now have the flexibility to interoperate with a wide variety of software technologies and hardware platforms. Independence from and choice among vendors are protected, and efficiency surpasses that of home-grown, complex custom coding regardless of whether that coding is based on open source or proprietary software.

## Future-proofing IT investments

Open standards and the Service-Oriented Architecture framework create a compose-once-leverage-anywhere (COLA) efficiency. This achieves lower lifecycle costs because legacy applications can be mapped to the SOA and to the future, making legacy IT reusable and reducing maintenance and integration costs.

## Better, more cost-effective security

As government organizations deploy SOA, each exposed service must be secured, creating exponentially greater security needs as numbers of both services and users increase. SOA can be used to deploy system-wide security, enabling each business process or application component to use the common framework for a common set of security services.

Government organizations throughout the world are seeking to fully realize the benefits of SOA. Most importantly, these benefits are the foundation of the primary reasons to adopt SOA for public service and defense: Doing more with less—but doing so in compliance with privacy and security mandates.

# Conclusion: evolving to the services-oriented world of government

Technology can be captivating, but when a government organization tries to become services-oriented, the technology becomes a secondary enabler of a larger trend: evolving public sector organizations to better serve their constituents. In this context, Service-Oriented Architecture reflects a larger re-engineering of processes, missions, and organizational structures to better address public sector stakeholders. Governments are responding to new market factors to achieve their missions—including budgetary restrictions, new technologies, and demands for improved services, as well as lessons learned from older proprietary technologies.

These changes are occurring on a global basis—from China's national approach, with regional implementation and adaptation to restructuring social-security service delivery throughout the country, to Chicago's Web-based portal for reviewing data relevant to the Public Building Commission's project information. Governments fundamentally understand that they can offer better services, garner significant cost savings, and dramatically increase efficiencies by implementing SOAs. They see SOA as a method of doing more with less.

SOA provides a method of evolving organizations in a manner that guarantees their future is not beholden to one technology. With it, organizations evolve to fulfill their service goals, rather than to implement another new system. Legacy systems are leveraged along with the new to save costs.

This future-proofing, SOA approach occurs through scalable solutions, both in size (from city to national) and in technological scope (from Web portals to federated directories of service). The process of becoming a services-oriented structure is not easy. Consider DoD's approach to DCGS, which links command-and-control centers in the world's largest military operation with intelligence assets from beginning to end. Successful organizational governance and approaches to managing participation and cooperation within the framework of DCGS remain paramount to success.

On a smaller scale, the Veterans Health Administration has already created a Web portal, MyHealtheVet, targeting support for its 157 hospitals and more than 850 community clinics. The challenges here included secure access to records both inside and outside the system via the Web portal, creating a system that was more responsive and allowed better access for a reasonable investment, and intelligently handling logistical necessities such as prescriptions and appointments. The resulting BEA SOA solution has been so successful that the VA is expanding MyHealtheVet with additional services, scaling the system to better meet its patients' needs.

Throughout the world, public sector services are changing, as these examples typify. As the Shared Services model progresses to include more and more agencies, bureaus, and departments, governments and the people they serve will realize tremendous benefits. They will get superior services in comparison to today's offerings, and will get them at significantly lower cost.

# About BEA

BEA Systems, Inc. (NASDAQ: BEAS) is a world leader in enterprise infrastructure software, delivering standards-based platforms for managing SOAs even in heterogeneous IT environments. Customers depend on BEA Tuxedo,® WebLogic,® and AquaLogic™ product lines to reduce IT complexity and leverage existing resources—to achieve a state of Business LiquidITy™ where enterprise assets are freed up to deliver maximum business value. Find out more at *bea.com*.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