

A large, abstract graphic on the left side of the page, consisting of several overlapping, curved, semi-transparent shapes in shades of gray, creating a sense of depth and movement.

ACHIEVING A SINGLE CITIZEN VIEW

White Paper
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Executive Summary

Have you ever received a tax bill for a piece of property you already sold? Stood in line for hours because you couldn't renew your driver's license online? Called a government agency and answered the same questions over and over as your call is passed from one department to the next?

At one time or another, everyone has experienced the frustration of dealing with government agencies that fail to integrate their citizen information. From a personal perspective, it can be frustrating. But from a government perspective, it can be extremely damaging, resulting in diminished trust in government, higher operational costs, poor employee productivity and morale, and — most devastating of all — a limited ability to deal with threats to public safety.

Establishing a single best view of appropriate citizen records or government service offerings should be an urgent priority for all government agencies — whether the “citizen” is an individual, an organization, a business, or even another government agency. Yet the ever-increasing complexity of today's IT environment, combined with the distributed nature of agencies and their citizens, can make this holistic view of data difficult to achieve.

This paper takes a closer look at the impact of dispersed citizen information and the potential benefits of implementing a single citizen view. It presents Sun's approach to achieving a single citizen view: building composite applications on a service-oriented architecture (SOA) — an approach that overcomes the complexity and limitations of previous integration tactics.

Chapter 1

The Single Citizen View Defined

A single citizen view encompasses the sum total of a person's interactions with the government — including past incidents, registrations, claims, and services either received or performed — based on integrated, up-to-date, real-time information from multiple sources.

In the business world, many companies are extremely good at gathering data about their customers. They consistently collect this information at the point of sale. They track customer buying habits and preferences over time. They survey customers and diligently record the results. They manage customer information from multiple sources, including contact details, customer valuation data, results of direct marketing campaigns, and so on. But all too often, they don't consolidate or integrate this information. Instead, the data resides in multiple systems, or "silos," managed by multiple departments or lines of business, in different geographic locations. The data is never cross-compared, cross-pollinated, or updated in any consistent way.

It's no surprise that the same problem occurs across government agencies, which often rely on a patchwork set of computer systems built over the years with no overall plan. Any development must take into account the fact that most departments or agencies already have a massive infrastructure in place, and this can't be replaced in the short to medium term. In addition, some departments have traditionally chosen the best-of-breed IT solutions for that department's function, without consideration of what's best for the government as a whole.

As a result, these agencies may wonder if it's even possible to create a single citizen view — not only for government, but also for the convenience of its citizens. And although the benefits are well understood, in most countries there's major opposition to building a single citizen database due to privacy concerns. Some countries will eventually establish a national ID, but in many countries, that won't happen.

“Governments in all tiers continue their efforts to become more constituent-centric and to use technology to pursue transformation toward a more seamlessly integrated government that provides its constituents with a single view.”

— Gartner, *“Key Issues for Government, 2007”*

Chapter 3

The Problems of Piecemeal Citizen Knowledge

Most government agencies are aware that the lack of a single citizen view can diminish the satisfaction level of citizens and lead to cost inefficiencies. But few have considered the complete range of costs that are a direct result of poorly integrated citizen information.

From a citizen's perspective

When citizens get the message that their government doesn't "know" or remember them, they may lose trust in its ability to deliver services and feel that their tax money is being wasted. Equally important, bad news travels fast on the Internet. One bad experience, one story about an agency's poor treatment of its citizens, can instantly be transmitted to millions of people around the globe, compounding the damage.

In addition, citizens feel frustrated when they waste time trying to extract information about their own records and dealings with government agencies. This leads them to form negative feelings about government and whether it is making the best use of their taxes.

From an IT perspective

The lack of a single citizen view is a symptom of inefficiencies in IT planning and ineffectiveness in IT infrastructure — a sure sign that taxpayer money is being wasted. The cost of purchasing, administering, managing, and maintaining the various systems that store citizen information can be considerable, and if the net result is splintered data that isn't integrated and can't be used to improve the delivery of services, that infrastructure is a suboptimal investment.

From a government perspective

In addition to the loss of trust and the expense of inefficient IT infrastructure, the lack of a single citizen view can result in even more serious consequences. For example:

- **Limited ability to deal with threats to public safety.** Incomplete access to up-to-the-minute data can lead to a reduced capacity to detect, monitor, and respond to pandemics, terrorism, and other threats to public safety that could potentially cause physical harm to citizens.
- **Poor employee productivity and morale.** Government employees know they're ineffective and inefficient when they have to ask citizens to wait while they piece together information from multiple records.

Chapter 4

The Opportunities of a Single Citizen View

While piecemeal information obviously creates problems, a single citizen view creates opportunities. In fact, a single citizen view can enable new capabilities across all points of entry, including police, fire, criminal justice, health and human services, taxation offices, and more. Used properly, it can also help improve public safety and citizen services, while enabling collaboration among government, industry, and the public.

The following are just a few examples of the opportunities afforded by this approach.

From a strategic perspective

Government is now expected to develop a unified face to citizens to enable seamless services, reduce the cost of doing business, and make government interactions simpler, more secure, and less complex — and at the same time save taxpayer money.

In addition, there's increasing demand to provide better outcomes for citizens, with better cross-government interaction and communication to commercial organizations, particularly in the area of public safety.

With a single citizen view, government agencies can improve how they deliver their services, enhancing citizen satisfaction and restoring trust in government, while cutting IT inefficiencies and costs. They can also position themselves to provide even better services in the future.

There's a tremendous opportunity for government agencies at all levels — national, regional, and local — to dramatically increase service with a single citizen view or by providing integrated views of government services. By consolidating citizen interactions with the government, citizen self-service portals can be implemented, enabling access to back-end government systems and making it easy for citizens to deal with everything from driver's license renewals and library book fines to jury duty and voter registration.

Another opportunity is the ability to streamline communication between agencies, eliminating redundant services and paring costs. In addition, a single citizen view can be critical to meeting regulatory compliance and privacy management requirements. These include regulations such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States, in which creating a single patient view is paramount.

Chapter 5

The Challenge: Integrating Data Silos, Bridging Islands of Information

While the benefits of a single citizen view are easily listed, the technological complexities of achieving this ideal are not always fully appreciated. This section examines the issues that make citizen data integration difficult.

Limitations of previous integration alternatives

Government agencies have been fighting the battle of poorly integrated citizen data for decades. The trouble begins the minute citizen information is stored in a second system. Unfortunately, most agencies have distributed citizen data across literally hundreds of systems, using multiple operating systems, database technologies, storage subsystems, and file formats.

In a world of growing complexity and competing demands, government agencies need to go beyond siloed, reactive business processes that are a result of custom interfaces among information systems that have vastly different service capabilities. To do this, they must develop a strategy for modern architectures and applications that are scalable, secure, standards based, and leverage existing IT resources to securely share appropriate information. Routine transactions between government and the citizens and businesses it serves can be consolidated into a real-time view of citizen activities and events affecting localities, states, regions, and countries.

Government can no longer justify unnecessary duplication of infrastructure that could otherwise be shared. Nor can it afford to continually build new systems to offer its services to other agencies or the public. Governments confront some hard choices: continue to install and service the buttoned-down, hard-coded, hardwired IT systems of today — or seize new approaches and tools that can adapt to the changing political, public-safety, and citizen-self-service climate that is becoming standard as more people and businesses rely on the Internet.

Challenges:

- Citizen data may be stored across many disparate systems, resulting in duplication, inconsistency, and erroneous information
- Departments or agencies may create their own — often duplicated — applications and records that contain citizen information
- Ongoing agency and program development creates more silos and duplication of data

- Multiple channels cause more disparate systems, where data may be maintained in more than one place, depending on the entry point
- Departments or agencies may be reluctant to give up control of their systems and data, making it difficult to manage data quality and consistency
- Point-to-point integration between systems may become inflexible and ineffective over time and doesn't offer single views of critical information in a timely fashion
- Governments must ensure consistent citizen identity and management, while meeting privacy rules and regulations
- Compliance mandates, such as those in the health industry, require organizations to exchange information in a common format, as well as protect privacy and confidentiality

Failed approaches to ensuring data consistency across platforms have ranged from enforcing strict IT governance policies to creating point-to-point integration between systems to having employees manually synchronize records across systems. These approaches have all broken down in the face of increasingly distributed information, inadequate middleware infrastructure, higher operational costs, and rising citizen expectations.

In addition, many organizations today have deployed multiple systems and networks, each chartered and funded by a single function or division, each with a narrowly focused goal, and each using different technologies and platforms. As a result, multiple silos have emerged, with little integration and minimal ability to exchange data and information.

Confronted with these problems, governments have tried data warehouses, portals, and business-to-business (B2B) exchanges — each of which came with its own limitations and challenges. Some recently adopted a strategy of Web-enabling each silo independently. While achieving the short-term objective of making these systems available over the Web, the resulting Web presence is often fractured and difficult for citizens to navigate. This approach can also make it extremely difficult to combine the functionality of various silos and create new value-added services.

Enterprise application integration (EAI) solutions have emerged over the past few years, enabling applications running on systems from different vendors to communicate and interoperate. EAI enables companies to integrate different information systems into new applications, create new value-added services, and dynamically adapt to change. Yet even EAI has limitations for data integration, because it doesn't address business processes.

A smarter approach: composite applications built using a service-oriented architecture (SOA) approach

Another approach to achieving an integrated, single citizen view is to build composite applications — applications created by combining multiple services — using a standards-based SOA approach. This approach, described in more detail in this section, overcomes the limitations of previous tactics by addressing both the technological requirements of data integration and the requirements of delivering the right data to the right people at the right time.

SOA overview

An SOA is an architectural approach that enables IT to integrate and manage data across legacy, packaged, and new applications. Building an SOA is the critical first step in achieving a single citizen view — a step that also allows the organization to preserve and leverage existing IT assets and rapidly develop new functionality in composite applications. Through the integration of siloed, disparate systems and streamlined processes, and an alignment of IT with those processes, government agencies can achieve complete visibility of citizen information across organizations and governmental entities, making data available where appropriate.

Composite applications on an SOA

An SOA using composite applications is a development approach that focuses on accelerating new application development by leveraging and reusing existing assets. In contrast to the tight coupling of previous development techniques, an SOA leverages industry standards to provide loosely coupled applications, driving flexibility, agility, and reusability.

Composite application development is process centric and based on SOA principles. It combines the benefits of custom development with those of a packaged application (prebuilt functionality) by extending existing applications and siloed application process fragments. This approach separates the process into its own layer, so changes can be made either to the process or any of the systems supporting it — with predictable ripple effects. The composite application approach enables organizations to integrate citizen data from multiple sources and achieve a single citizen view. Equally important, it provides for better alignment between IT capabilities and agency goals.

Harrow Council improves citizen service through Access Harrow

To provide its citizens with better service, Harrow Council, under the leadership of Carol Cutler, director of business transformation, launched an ambitious program known as Access Harrow to ensure that citizens would only have to “Tell the council once.” When the program is in place, changing information in one Council department will trigger consistent changes in all other departments. For instance, when a citizen files a change of address form in the parking office, the records in other council offices — rubbish collection, libraries, planning — will be automatically updated.

“As well as excellent value for money, this approach based on integration is leading to major improvements in resident services. It will also enable staff to concentrate on providing first-rate service to residents, rather than undertaking repetitive administrative tasks.”

Carol Cutler

Director of Business Transformation,
Harrow Council

Chapter 6

Sun's Solution: Sun™ Master Data Management Suite

Sun offers a combination of products and services to help government agencies achieve a single citizen view by deploying an SOA platform and building composite applications. The Sun SOA architectural style emphasizes loosely coupled, shareable, secure, network-based services that enable government flexibility in an integrated, technology-neutral manner. Sun can help traditional government organizations, tax and revenue, transportation, and public health and safety authorities achieve a single citizen view with the Sun Master Data Management Suite (Sun MDM Suite), a completely integrated, secure platform to develop, deploy, and manage enterprise integration and single-view composite applications using an SOA approach. The suite is based on open standards and comprised of core functionality from Sun Java™ Composite Application Platform Suite (Java CAPS) — one of the leading enterprise integration platforms for SOA and composite applications.

Overview

Sun MDM Suite provides a comprehensive integration platform to build and manage SOA-based composite applications that enhance, aggregate, and leverage the citizen data within them.

Using service-oriented process integration, a single-view composite application can access citizen data held in enterprise resource planning (ERP), financial, and legacy applications. It employs intelligent data standardization and matching algorithms to recognize related citizen information distributed across these and other custom applications and link the siloed, application-centric citizen identities to a universal citizen ID, building a master index.

As information is loaded into the single-view application, each citizen's data is cleansed and distilled into a single best-record view that can be used to improve source system data quality, identify and build programs for citizens, and serve as the foundation for a new generation of citizen-centric services. Implementing this approach to citizen data integration is a relatively low-risk undertaking and can be done incrementally.

Key advantages

Sun MDM Suite enables governments to preserve investments in existing applications while making better use of the citizen data within them. This approach offers several key benefits:

- **Expanded visibility of citizen information across the government.** Sun single citizen view solutions identify common records across disparate systems using intelligent data cleansing and matching technology to automatically build a cross-index of the single best citizen record. This greatly improves visibility into a citizen's relationship with government agencies, creating connected, integrated, and secure governmental operations. Now, governments can more quickly identify threats to public safety or harness the ability to coordinate service offerings for improved social and business services.
- **Real-time access to citizen information.** Sun single citizen view solutions enhance data quality and accuracy through data integration and communication. When citizens make contact with the government, up-to-date information from several integrated systems can be made available to agencies, including health and human services, homeland security, and public safety. Employees are able to view complete, aggregated information about each citizen, make more accurate responses, and provide better service.
- **Improved productivity and reduced costs.** Sun single citizen view solutions enable analysts to rapidly design and generate single view applications that help agencies coordinate responses to citizen activities. These may improve public safety by identifying appropriate first responders and responsible government agencies; eliminate duplication of services, reduce errors, and save processing time; increase performance; and reduce overall costs.

Chapter 7

Services

Consulting experts from Sun and its partners can assist government agencies with every facet of developing, deploying, and managing enterprise integration and composite applications in a service-oriented architecture. Sun's approach to SOA includes:

- Expert technologists and architects with many years of SOA experience to help agencies adopt SOAs in the government environment
- Focus on aligning agency objectives and technology with a pragmatic SOA approach refined from years of hands-on experience and best practices
- Government-industry expertise that shortens ramp-up time, lowers project risk, and provides agency-specific problem resolution
- Hands-on knowledge transfer to ensure critical success factors are in place for implementation and long-term management success
- Sun SOA Repeatable Quality (RQ) Methodology for an iterative, incremental approach to discovering, enabling, and realizing an SOA

Chapter 8

Summary

Achieving a single citizen view is no longer a luxury or a “wish-list” item for government agencies. It is an urgent matter. The lack of coherent integrated information about citizens causes too much inefficiency and waste, and the opportunities engendered by a single citizen view are far greater than initially imagined.

By building composite applications using a standards-based SOA approach, organizations can achieve a single citizen view and make their applications more flexible and agile at the same time. Sun facilitates the move to this approach with the Sun MDM Suite, a comprehensive integration platform that enables real-time application connectivity, data synchronization, and process-centric composite applications. By employing the Sun MDM Suite, government agencies can deliver end-to-end citizen data integration across legacy and new applications — and dramatically improve citizen satisfaction.

Sun single view solutions can help governments integrate their systems and data to achieve a consistent view of information across multiple agencies. And it’s clear that achieving a single citizen view can significantly enhance opportunities for improved public safety, reduced costs, and better service delivery.

Learn More

To learn more about achieving a single citizen view with Sun products, services, and technologies, visit sun.com/soa/government.

For additional information on Sun MDM Suite, visit sun.com/mdm.

For more on Sun in government, visit sun.com/government.

