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SUN™ MASTER DATA MANAGEMENT SUITE

White Paper
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Executive Summary

Business and government agencies execute better when they make decisions based on complete and accurate information. However, amassing complete and accurate information becomes more challenging as entities evolve. As organizations expand into multiple geographies, their information assets become fragmented across database instances managed by a variety of service providers. In addition, many global enterprises are required to meet compliance norms in several countries. Mergers and acquisitions bring information assets that must be integrated into the parent organization quickly and efficiently. And continued outsourcing increases the dispersion of data by moving it away from the original enterprise's internal resources.

Enterprise information systems hold the “core entities” of organizations, including customers, partners, suppliers, products, employees, citizens, accounts, and locations. Decision makers in any organization rely on such information assets to produce actionable insights, which require integrated information about citizens for government, patients for healthcare providers, and customers for retail organizations.

Today's global business economy creates a pressing need for accurate business intelligence, increased operational efficiency, and compliance — all within a cost-effective business framework. In recent years, master data management (MDM) has emerged as a solution to many of these endemic problems.

The need for a single- or appropriate-entity view becomes evident as soon as more than one application begins storing the same set of data in multiple data models distributed divisionally, departmentally, or geographically. This is also evident from the fact that Gartner reports the customer data integration (CDI) market reaching \$1 billion through 2011.¹

Gartner indicated that “Through 2010, 70 percent of Fortune 1000 organizations will use MDM as a disciplined process to achieve consistency in commonly shared business information for compliance, operational efficiency, and competitive differentiation purposes. By 2010, 30 percent of CDI initiatives will become part of a wider MDM program.”²

¹ “Predicts 2008: Master Data Management,” Andrew White and John Radcliffe, *Gartner, Inc.*, February 25, 2008.

² “Predicts 2008: Master Data Management,” Andrew White and John Radcliffe, *Gartner, Inc.*, February 25, 2008.

This white paper illustrates the problems created when multiple databases reside in multiple locations, across systems supplied by multiple vendors. In addition, it defines the solution known as MDM and introduces the Sun™ Master Data Management Suite (Sun MDM Suite). Recognizing the challenges faced by multiple industries that require a unified approach to service-enabling MDM, this paper explores how the Sun MDM Suite solves this need with a prepackaged, preintegrated product.

Considering that open source is a critical component of the MDM solution, this paper also explains why Sun is one of the few vendors that is able to offer the breadth and depth of an application integration platform suite. It discusses how the Sun MDM Suite enables customers to solve their immediate needs, while providing a software architecture foundation that can be built on for future solutions.

Chapter 1

The Data Management Problem

It's clear that fragmented information and poor data quality lead to inefficient business operations. For most organizations, when data is dispersed across disparate systems, data quality issues become persistent. This makes supplier, company, and customer relationships more complex, a situation that is multiplied as merger and acquisitions blend disparate data sets through overly complex processes. The result is an ineffective middleware infrastructure with a large systems footprint caused by duplication — an ungainly infrastructure that nobody can rely on, least of all the organization's employees and customers.

Poor data quality also complicates governance and compliance, because who can be sure that all the data meets requirements? It causes money to be wasted on ill-targeted marketing and sales campaigns, due to the impossibility of identifying exactly who the customers are and what they want. It creates missed opportunities for cross-selling and up-selling, again because the company can't accurately define its customer base. Operational costs continue growing and efficiency drops, despite efforts to improve both of these areas.

The result of ineffective data management can have far-reaching consequences. The organization's reputation for customer service may become tarnished, when records are lost or simply take too long to retrieve. Customers could even receive the wrong service or product, which certainly doesn't enhance their trust in the company. Productivity goes down because employees spend too much time looking for information or simply end up with the wrong information.

Companies may actually lose potential revenue due to their inability to take advantage of customer opportunities, as customer data is locked into disparate applications across the extended enterprise. For example, as companies advance from a single channel (such as in-store presence) to make better use of two-way, Web 2.0-style collaboration, it may become difficult to know which prospects and customers across these independent data sources are the same people. This limits the optimal use of customer data.

An incomplete view of a customer can lead to costly errors. Consider the following potential scenario. When an underwriter is evaluating the risk of providing a loan, financial information might lie within a large number of internal systems, as well as third-party systems such as Experian. Without the ability to confidently determine that a specific name is the same person in each system, significant customer data may be excluded from the risk analysis.

Excessive costs and higher risk may be incurred due to the impossibility of eliminating old, outmoded applications. These are often retained simply because the company's "local" data is not accessible outside of the legacy application, causing an increased burden on IT to maintain the expensive, proprietary software and systems that run it.

As a solution to these problems, MDM technology is often proposed. That is why it is important to define MDM, as well as a related area, customer data integration (CDI).

MDM defined

MDM offers a proven solution to these problems. Because it creates an authoritative, accurate, and secure data environment that represents a "single version of truth," MDM produces an accepted record system that can be employed across a wide range of application systems, lines of business, and user communities.

As defined by experts in the field, "master data management is the framework of process and technologies aimed at creating and maintaining an authoritative, reliable, sustainable, accurate, and secure data environment that represents a single version of truth — an accepted system of record used in both the intra-and inter-enterprise, across a diverse set of application systems, lines of business, and user communities."³

A corporate-wide initiative, MDM consolidates, cleanses, removes duplicates, matches, publishes, and protects the reference data of core business assets. This delivers a wide range of benefits, including the ability to handle homogenous and integrated sources, instead of heterogeneous and fragmented data sets. MDM advantages include improved visibility into customer behavior leading to better decision making about product promotions and pricing; improved visibility into patients, citizens, and other related entities; and more efficient and accurate regulatory compliance.

In a related area, CDI involves building a single, consistent view of customer data, recently being referenced as MDM for customer data. This specialized form of MDM deals specifically with building customer reference data. For organizations involved in customer-centric services, such as healthcare and government, CDI is critical. And it is also an extremely valuable asset for sales and marketing organizations that are hoping to derive business insights from sales data and customer buying behavior.

³ "Master Data Management and Customer Data Integration for a Global Enterprise," Alex Berson and Larry Dubov, McGraw-Hill, 2007.

Chapter 2

Sun MDM Suite

Recognizing the need for a unified approach to service-enabling MDM, Sun offers a prepackaged, preintegrated product — the Sun MDM Suite. Most other vendors provide disjointed solutions, such as separate applications for managing master data and for service-enabling the master data. While targeting the specific needs of providing a data management solution, Sun is one of the few vendors to offer the breadth and depth of an application integration platform suite. The Sun MDM Suite enables customers to solve an immediate need, while providing a software architecture foundation that can be built on for future solutions.

The Sun MDM Suite is a completely integrated, secure platform to develop, deploy, and manage enterprise integration and single-view composite applications using a service-oriented architecture (SOA) approach. The Sun MDM Suite addresses the need to preserve investments in existing applications while enhancing, aggregating, and leveraging the data within them to provide a single “best” entity view. The suite is based on open standards and comprises core functionality from the Sun Java™ Composite Application Platform Suite (Java CAPS) — one of the leading enterprise integration platforms for SOA and composite applications. Key components of the Sun MDM Suite include:

Sun Master Index software

Sun Master Index software provides a flexible framework to design, configure, and create tailored single-view applications that cleanse, match, and index data entities such as businesses, persons, and products across the enterprise. It provides a comprehensive wizard to create single-view applications that can expose all master index operations as services. The product includes a console to graphically create and manage rules for matching, standardization, normalization, and so on. It also ships with a browser-based stewardship console to manage master data.

Data profiling

When consolidating data from various sources, assumptions cannot be made about the quality of data sets. Profiling tools are required to inspect and understand the data. The Sun MDM Suite uses the canonical object model from the Sun Master Index application to process raw data from files or staging tables. Data is then processed through a rules-based engine that looks for frequency patterns. A variety of frequency analyses can be performed to deliver frequency distribution tables that can be used to define and refine matching and standardization rules.

Cleansing

Data cleansing is a process in which raw source data is cleansed, standardized, and normalized based on the rules-based engine. Users can perform corrections and transformations to the data sets, based on their analysis of output from the profiling stage. To aid in the matching process, data is normalized and standardized. Normalization identifies a general alternative usage (or misuse) of words and applies the normal pattern. This might involve changing “Bob” to “Robert,” or “St” to “Street.” In contrast, standardization is the process of parsing a larger data set such as address (with street names, numbers, city, and state in a single indistinct form) into its individual components.

Matching

The Sun MDM Suite de-duplication efforts rely on a core Sun Match Engine. The Sun Match Engine is a powerful, high-performance, extensible, configurable robust engine, built on top of proven methodologies and technologies. The Sun Match Engine compares complex data records containing a multitude of data types and calculates a global composite weight that reflects how closely the records match. The resulting comparison weight is either a positive or negative numeric value, representing the degree to which the compared records are similar.

Sun Data Integrator software

Sun Data Integrator software provides extract-transform-load (ETL) services as well as connectivity to a vast range of heterogeneous and diversified data sources. It comes with a visually rich modeling environment that assists developers in quickly performing required mappings and transformations.

Initial match and load

The Sun MDM Suite provides a performance-enabled framework to effectively match and load data into various master index tables. Through the use of an innovative approach, data can be prematched outside the Sun Master Index application and then loaded into the appropriate tables. The initial match and load utility performs this task in a scalable manner, enabling it to handle very large volumes of data by delegating tasks in a synchronized cluster. Matched data sets are loaded into index databases using the Sun Data Integrator software’s bulk loader utility.

Sun Enterprise Service Bus software

Sun Enterprise Service Bus software is a Java technology-compliant, Web services-based, pluggable integration platform that incorporates the Java Business Integration (JBI) standard to allow loosely coupled components to communicate with each other through standards-based messaging. It provides core integration, including comprehensive application connectivity, guaranteed messaging, and robust transformation capabilities, as well as a unified environment for integration development, deployment, monitoring, and management.

Sun Business Process Manager software

Sun Business Process Manager software enables long-lived, process-driven integration. It provides the ability to model, test, implement, monitor, manage, and optimize business processes that orchestrate the flow of activities across any number of Web services, systems, people, and partners. It delivers an open, graphical modeling environment for the industry-standard business process execution language (BPEL).

Sun Adapters

Sun Adapters provide extensive support for integration with legacy applications, packaged applications, and data stores through a combination of traditional adapter technology and modern JBI and Java Connector Architecture (JCA) standards-based approaches.

Sun MDM Suite benefits

Feature	Function	Benefit
Single entity view	Provides a single view of critical business entities.	An entity's data dispersed across many applications and systems is brought together by the Sun MDM Suite to manage master data by providing unified, single, truthful view of the master data.
Extract, match, and load data	<p>Tools to extract data from disparate source systems and map to master index object model.</p> <p>Matching rules to create master index image from source data.</p> <p>Load matched and cleansed data into master index.</p>	<p>Easy and integrated approach using graphically rich tools to extract source system data from heterogeneous source systems mapped into master index's canonical object model.</p> <p>Ability to bulk match these records using innovative cluster-based distributed processing.</p> <p>Bulk load matched data into master index.</p> <p>This process significantly reduces the time and effort required to extract, deduplicate, and load high volumes of data.</p>
Data profiling, cleansing, standardization, and matching	<p>Configurable profiling and validation rules to analyze and understand patterns in the data.</p> <p>Fine tune match weights and configure matching rules.</p> <p>Extensible standardization engine.</p> <p>Extensible matching engine.</p>	<p>Profiling reports support fine tuning matching, standardization, and other cleansing rules. Cleansing provides data transformation facility.</p> <p>Standardization algorithms can be plugged in — easy to extend support to other languages/locales.</p> <p>Users can extend the match engine by adding new match comparators algorithms.</p>

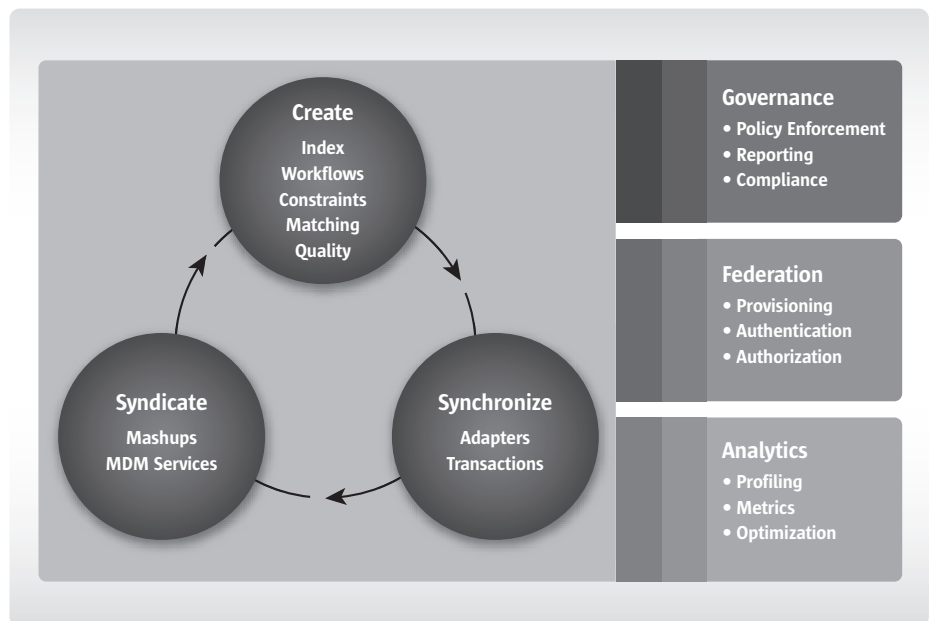
Feature	Function	Benefit
Web application for data stewardship	<p>User interface to create, search, and update master data.</p> <p>Resolve potential duplicates, review automatic matches, merge, un-merge enterprise profiles.</p> <p>Configurable reports.</p>	<p>Enables post processing of master index data through a rich, browser-based interface.</p> <p>Nonprogrammatic user interface to allow data stewards to create, search, and update master data.</p> <p>Side-by-side comparison of duplicates enables easy resolution of data.</p> <p>User can use preconfigured reports or can configure own reports.</p> <p>Extensive transaction logging supports audit and other governance compliance.</p>
Integrated development environment (IDE) to configure MDM application	<p>User-definable object model.</p> <p>Application creation wizard and editor for configuration files.</p> <p>Business process model definition.</p>	<p>User can use existing object model templates or create own model.</p> <p>All matching, standardization, and normalization rules can be nonprogrammatically configured using a graphical editor.</p> <p>BPM tool provides ability to model, monitor, manage, and optimize business processes that orchestrate other events and the flow of master data based on master data activities.</p>

Feature	Function	Benefit
Standards-based environment to develop, deploy, run, and monitor MDM and SOA applications	<p>Master index operations exposed as Web services.</p> <p>Can be seamlessly integrated with other SOA applications.</p> <p>Uses standards like the Java 2 Platform, Enterprise Edition, Java Management Extensions, Java Business Integration to deploy, run, orchestrate and monitor MDM and SOA applications.</p>	<p>Unified IDE to create and deploy both Sun SOA applications and MDM applications.</p> <p>Unified Web-based user interface to monitor MDM and SOA applications.</p>
Source synchronization	Propagate single view of master data to subscribing applications.	Master index publishes changes (adds, updates, merges, unmerges, etc.) of master data to subscribing systems (in either XA or non-transactional form). This makes it possible to synchronize applications that require updates based on master data events. Business process and workflow notifications can be triggered based on such events.

Chapter 3

MDM Lifecycle

Effectively applying MDM technology requires not just establishing the data model, storage, and data quality, but also the management lifecycle that goes beyond solving integrity and quality problems. The technology needs to ensure that the information is made available to diverse consumers and access to enterprise reference information is controlled according to organizational policy. The Sun MDM Suite provides all of the capabilities required to implement this lifecycle, organized into three phases:



Sun's Vision: Mastering the MDM Lifecycle

Create and update — Builds the master index, the data quality, and de-duplication integrations, and manages the operation of the index through appropriate workflows. Additionally, builds the interfaces to noninvasively create and populate the index.

The “Create” phase (which includes “Update,” since the lifecycle evolves through multiple iterations) is where the major decisions about the master data content are made and reviewed. In addition to designing the data model, rules, and policies, this phase includes generating the MDM applications and core services that deliver the business value. At the completion of this phase, the organization can offer the stakeholders the MDM core services either by responding to requests from other applications, or by participating in end-to-end business processes as value-adding activity.

Synchronize — Propagates “clean” and “unified” (for example, de-duplicated) information back to integrated systems using services or other noninvasive technology.

Once the organization can offer MDM as an active and/or passive service, the MDM project then evolves into a plan for whether the MDM application should actively deliver MDM services to the rest of the application landscape. As with the rest of the MDM lifecycle, the decisions made in this phase are not just technology decisions, but also practice and policy decisions. Architects must analyze the application landscape to form the best strategy, answering questions such as “Do my applications support MDM corrective actions such as ‘merge’ messages? If not, what automated or nonautomated operations can I establish to remediate that gap?”

Syndicate — Creates and manages “virtual” views on the full range of entity information. All access to customers, for example, should be available as services implemented by the MDM in different views such as a finance view or sales view. The Sun MDM Suite decodes these higher-level views to technical operations based on content, decomposing the “get customer” view into a “get customer from SAP” and “get customer from Siebel” view.

Syndicating the master data in the organization is the best way to present that information to other applications for a number of reasons:

- It hides the complexity of multiple and diverse providers of the information behind a single, simple, and accessible service request. This single point of access makes application development and maintenance much more efficient.
- It allows the organization to define rules about access to entities at a business level, abstracted from the technical complexity of the application stores, which binds nicely to a role-based authorization strategy (see Governance below).

In addition to supporting the three phases of the MDM lifecycle, the Sun MDM Suite applies three operational layers on top of the lifecycle, which control and monitor all three of the phases. The three operational layers include:

Governance — Governance plays a key role in all three phases. In the “Create” phase, the data quality operations and matching operations serve as key underpinnings of a compliance strategy: Those services ensure that the customer, product, material, or partnership referenced has been strictly verified. Next, in the “Synchronize” phase, the MDM application controls, executes, and audits the notifications and repair of incomplete information in the application landscape, helping to reveal quality problems at their sources. In the “Syndication” phase, the MDM application serves as an ideal control point for governing access to master data. Today, even the best access management technology treats resources as static “URLs,” technical implementations of a siloed system operation. The Sun MDM Suite offers higher-level views and allows the Sun Java System Access Manager to take advantage of them. Therefore, the organization can govern the utilization of MDM services at a “business” level, rather than governing technical services.

Federation — With mature standards like Liberty and Security Assertions Markup Language (SAML), a trusted business partner’s view of the customer and products can also be incorporated. As a leader in the federated identity and access management areas, Sun offers the ability to extend a customer’s reach in a secure and compliant manner. Thus, the benefits of all three phases can be extended to business partners using proven, trusted, and open standards.

Analytics — The Sun MDM Suite offers extensive reports, alerts, and analysis tools at all three phases, to give an organization visibility into many important aspects of their IT landscape, including the sources of quality problems, histories of the de-duplication activity, audit logs of access, searches for enterprise objects, as well as statistics about the number and kinds of master data errors encountered.

In the “Create” phase, analytics are tremendously important, as they identify problems early, and thus help ensure that the modeling and policy decisions can address the quality gaps. Then in the “Synchronize” phase, the analytics serve as monitors for the external applications. The analytics can raise an alarm in error conditions, such as when an application fails to accept a de-duplication message. Finally, in the “Syndicate” phase, analytics can help ensure that the organization’s policy goals around data quality and access are being met.

MDM projects can often involve nontrivial people and process changes, as well as technology changes. Mastering the MDM lifecycle as a methodology helps business people and IT architects navigate the complexity of MDM, and helps ensure that best practices are applied uniformly across diverse projects. CIOs will increase the likelihood of achieving their goals in efficiency and competitive advantage if the product they employ supports the lifecycle.

Chapter 4

The Role of Open Source in MDM

Sun Microsystems achieved an outstanding five out of five score for “Interoperability and Standards Support” in the January 2008 Current Analysis SOA Suites report. Sun employs the same interoperability technology for MDM and SOA.

Today’s global enterprises operate in increasingly heterogeneous environments. With Java technology and Microsoft .NET interoperability, enterprises can have the assurance that Web services will operate seamlessly across the enterprise. Industry-leading interoperability with Java and .NET platforms through Web Services Interoperability Technologies (WSIT) makes it easier for enterprises to develop secure, cross-platform Web services that are reliable and faster to deploy in an SOA.

Sun and Microsoft have both communicated their commitment to interoperability between the Windows Communication Foundation and the Java platform. Although other vendors are adopting this, Sun took a leadership role in Web services to help ensure Java technology and .NET interoperability. The Sun/Microsoft strategic alliance for Web services has created interoperability components that sit between the Java platform and .NET framework and are focused on the areas of security, messaging, quality of service, and metadata support. They are being delivered to the OpenJavaEE™ community through Project GlassFish™.

Open-source software has been widely recognized for providing significant value in many areas, such as operating systems and Web servers. Although major vendors use open-source components within their MDM/business integration solutions, almost none develop their production software as open source. This means that nonopen-source software cannot leverage the larger community that could otherwise participate, limiting the quality and functionality of the software.

For these reasons, customers have had to rely on mostly proprietary solutions for business integration and could not take advantage of the true benefits of open source, such as:

- Low barrier to entry and exit
- No vendor lock-in
- Ability to evaluate the source code before making a large commitment to a software platform

Sun's open-source leadership

Sun has made a major contribution to Mural, the largest open-source community focused on MDM. The benefit of the community-participation approach is that it increases the transparency of source code, enabling developers to test and try software before making a commitment, as well as getting involved in future enhancements to the product. It also helps businesses gain a deeper understanding of their vendors' products, which can reduce risk when making a technology investment, and provide the opportunity to guide future product enhancements to expand customer reach.

Mural

Sun initiated Mural to collaboratively develop an MDM solution based on open standards and open specifications. Currently, Mural is developing an ecosystem of products that solve data management problems through a collaborative approach. Leveraging other world-class, open-source communities such as Open ESB, NetBeans™, and GlassFish, Mural seeks to build a foundational, open-source data management infrastructure for traditional data warehousing and business intelligence initiatives, as well as data services for SOA initiatives and enterprise Web 2.0. With the Open ESB, NetBeans, and GlassFish, Mural provides a technology infrastructure that uses unified development and runtime environments.

Open ESB

The overall goal of the Open ESB, is to create an open-source, world-class set of technologies that will enable organizations to create and participate in global service collaborations, a fundamental requirement for businesses across all markets and the main reason for the existence of SOA and its related technologies. An alternative to proprietary, closed-source ESB and SOA products, the Open ESB not only leverages standards required for global service collaborations, it also offers an architectural approach that provides a mandatory separation of concerns to create and participate in global service collaborations.

This means that developers have the tools and runtime environment to create robust collaborations. Security and network administrators can create and apply policies that allow full participation in service collaborations without sacrificing the organization's security or compliance requirements. The Open ESB now boasts more than 600 registered users, including contributing members. More than 40 components have been added to the project, including 10 components contributed by ISVs such as Imola, Gestalt, Bostech, and Stort.

GlassFish

This open-source development project is based on the source code for Sun Java System Application Server Platform Edition 9, donated by Sun Microsystems, and TopLink persistence code from Oracle. It provides a structured process for developing a high-quality application server that makes new features available faster than ever before. The project was created as the response to Java developers who wanted access to the source code and the ability to contribute to the development of Sun's next-generation application server. It is designed to encourage communication between Sun and Oracle engineers as well as the developer community.

NetBeans

An open-source project, NetBeans is dedicated to providing rock-solid software development products that address the needs of developers, users, and businesses that rely on the NetBeans IDE as a basis for their products. The NetBeans project is also a vibrant global community. In 2000, Sun made NetBeans its first sponsored open-source project.

Chapter 5

Applying MDM in Vertical Markets

MDM in healthcare

To understand the need for MDM in healthcare, one has to understand the tremendous costs of duplicate tests, preventable errors, and unnecessary hospitalizations. These costs have been estimated in the trillions of dollars in the U.S. over the next decade. A large fraction of this loss comes from problems preventable with good MDM. For example, some researchers have reported, “one out of every five lab tests is unnecessary [due to lost results]” (“Ballpoint Pen, Clipboard, Rows and Rows of Paper Files,” N. Gingrich, *The American*, March 2007). In addition to improving efficiency and reducing costs, MDM can offer real benefits to patient care, since clinicians can make better decisions if they have complete information.

MDM in healthcare typically involves aggregating and indexing information about patients and providers that exists in the diverse and complicated landscape of applications accessed by hospitals, insurance companies, and physicians practices. These environments can include:

- Clinical systems that capture voluminous and frequently unstructured data about patients at the point of care
- Administrative systems that manage hospital operations, not unlike the ERP, logistics, and CRM applications found in other industries
- Departmental systems that capture laboratory data in specialized technical domains (for example, radiology, pathology, blood bank, and so on)
- Electronic exchange of information with partners, including physician practices, insurance companies, and various regulatory bodies

One area MDM is commonly applied is in the registration process, where data entry errors of key information unnecessarily generate new patient records for arriving patients, instead of tying the current encounters to the patient’s existing records. MDM technology can trap and identify these data entry errors by performing a match on all available data, and can find the existing records even if some of the key data doesn’t match.

Another benefit is in the exchange of claim information between hospitals and insurers. This exchange is governed by multiple levels of state and federal legislation, such as the Health Insurance Portability and Accountability Act (HIPPA), as well as hospital and insurance company policies. The information encoding requirements are extremely complex, which makes them perfect recipients for MDM data quality services.

The Sun MDM Suite helps healthcare operations:

- Aggregate disjointed information on episodes of care to holistic patient views
- Synchronize data growth, compliance, and budgets
- Structure data not by episode, but by patient profile
- Secure access to information compliant with workflow and privacy regulation
- Enforce stronger access control, fraud detection, and activity monitoring

MDM in telecommunications

Large telecommunications service providers (SPs) maintain very complex applications landscapes in the course of delivering voice, data, entertainment, and other services to their customers. One branch contains business support systems such as billing, customer management, finance, HR, marketing, and electronic commerce. An entirely separate branch of SP applications supports the network. These highly specialized applications provide basic communications functions: call connection, switching, roaming, voice mail, conference calling, authentication, and a myriad of high-performance software systems. SPs face MDM challenges in both areas: New communication systems are constantly coming online with unique authentication systems and ways of identifying subscribers. Customers are acquired over the Web through virtual operators. Data is collected about subscribers in multiple business systems, introducing duplication errors. MDM provides a layer that links this information across both branches and provides views that can be personalized, aggregated, and secured, so new applications can benefit from information across the landscape.

MDM can benefit SPs in a number of different areas.

- In the business systems groups, MDM can detect when subscribers have more than one product from the company, but are not recognized as one subscriber. Detecting this problem helps ensure that the subscriber is not solicited for a service they already receive, and is also beneficial since it reduces the company's marketing efforts.
- In the applications development groups, MDM consolidates the authentication, authorization, and accounting systems for mobile network and communications applications so that developers have a much simpler interface in order to accomplish these tasks.
- In e-commerce applications, such as provisioning, customers that arrive through MVNO partnerships, as well as by lowering error rates of orders and inventory messages exchanged with suppliers.

The Sun MDM Suite helps telecommunications operations:

- Develop new and compelling mobile applications faster than their competitors
- Monetize their close relationships with subscribers in the face of competition from “over the top” (Web pure play) services
- Blend services from communications and Web sources to provide true “converged” applications
- Personalize network services based on information present in the network (such as the location and availability of a subscriber), information present in the business systems of the company (billing information, family plans, affinities), as well as information available from partners and data service providers

MDM in government

In the commercial space, inconsistent data can lead to poor business process and money lost. When government data is inconsistent, it means that tax returns could be affected, criminals could go free, or terrorist could go undetected. Across the many diverse government domains that range from defense and intelligence to health and human services, the need for consistent, quality data is critical. Most government agencies do a great job of gathering data, however, all too often they find they're unable to consolidate or integrate information because the data resides in multiple systems or silos, is managed by different departments or agencies in various locations, and is never updated in any consistent way. Agencies often rely on a patchwork set of computer systems that have been built up over the years.

The Sun MDM Suite presents a tremendous opportunity for government agencies at the federal, state, and local levels to dramatically impact the interactions within the government and from government to citizens.

One example of how MDM could be implemented is in a “Single War Fighter View” where all of the benefits and services provided by the military to a war fighter could be provided to the soldier or sailor depending on their rank, years of service, and base location. These benefits could include medical health benefits, insurance claims submitted, housing benefits/allowance, financial/retirement benefits, email/calendar, and so on. When the soldier or sailor accesses their information, one way of securing this access would be to require them to use their Common Access Card (CAC), which is the DoD military issued identification card (soon to be replaced with the PIV card). This added level of authentication could be incorporated into the MDM through Sun's Identity Management software.

Another perspective on MDM might include a “Single Intelligence Analyst View” where an analyst is researching a “person of interest.” The analyst could use MDM to consolidate information regarding this person of interest from across multiple data sources and use this composite view to detect patterns or make inferences.

While there are many other examples that could be provided, the last example is the “Single Citizen View” where, by consolidating citizen interactions with the government, government agencies can implement citizen self-service portals — providing easy assistance for services ranging from driver license renewals and library book fines to jury duty and voter registration.

The Sun MDM Suite makes it possible for government organizations to:

- Consolidate and integrate multiple data sources to create a single experience
- Enable existing applications to share information and data
- Provide a single point of entry for online an war fighter, analyst, or citizen
- Lower operational costs by enabling cross-agency information sharing
- Identify citizens and communities that need government services

Chapter 6

Summary

Improved visibility into an enterprise's most critical asset — its data — is key to success for many businesses in today's global, competitive market. With improved visibility, enterprises can make more informed business decisions, offer more targeted products and services, and ultimately increase revenue and business growth. This is true for most industries — healthcare, government, telecommunications, retail, and even manufacturing. Without accurate data, many enterprises suffer the consequences of inefficient business operations such as missed opportunities for cross-selling and up-selling, loss of revenue, and poor productivity.

Sun can help enterprises improve the integration and management of data with the Sun MDM Suite, a comprehensive and unified offering for creating an integrated, consistent view of master data leveraging current applications, data, and systems. The Sun MDM Suite addresses the full MDM lifecycle, from extracting, cleansing, and matching data in source systems for loading into the master index, to managing the master index, which includes de-duplication, merging, and auditing. With the Sun MDM Suite, enterprises can dramatically improve the quality, accuracy, and visibility of data across the enterprise.

About Sun

A singular vision, "The Network is the Computer", drives Sun in delivering industry-leading technologies that focus on the whole system — where computers, software, storage, and services combine. With a proven history of sharing, building communities, and innovation, Sun solutions create opportunities, both social and economic, around the world. You can learn more about Sun at sun.com.

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