

An Oracle White Paper
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Building the Business Case for Master Data Management in the Public Sector

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“My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government. ... Executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public.”

– President Barack Obama, *Federal Register*, Vol. 74, no. 15

Executive Overview

Master data management (MDM) is a set of technologies and processes organized into a discipline that allows organizations to actively manage data across the enterprise, rather than “maintaining” it in each transactional system. The recent rise in MDM adoption is directly attributable to its foundational nature within any organization’s IT architecture. The dramatic improvements in data quality achieved with the right MDM solution can address key challenges:

- *Deliver a single view of citizens/beneficiaries across different programs to increase compliance and reduce fraud*
- *Allow citizens to make address changes once and have the updates flow to all systems/programs*
- *Consolidate items, parts, assets, and vendors to achieve procurement and financial management savings*
- *Produce a unified view of employees*
- *Align data from multiple planning, budgeting and performance management systems to enable real-time visibility into organizational efficiency and effectiveness*
- *Deploy an IT capability that benefits a broad set of functions and programs without requiring replacement of existing systems*

Integrating master data can be perceived as an IT-related issue, and, hence, business stakeholders may be reluctant to engage. However, because improvements in data quality benefit any function dealing with information about constituents/citizens, vendors/suppliers, locations/sites, etc., the organizational will to pursue an MDM solution must be cross-functional and process-oriented and outcome focused. MDM requires acceptance and wide organizational support, and the message resonates best when MDM is framed in a business context.

Conversely, errors in and/or a lack of master data across multiple sources/applications can cost an organization significantly in terms of missing business opportunities or creating dissatisfied citizens. MDM helps in reducing such costs and helps deliver on the mission of the organization. This paper will give the reader an overview of the following:

- Why is it important to create a business case for the investment in MDM technology?

- How does one go about creating the business case for a public sector organization?, and
- What benefits are organizations achieving from their investments in MDM strategies?

Why MDM?

“MDM technology helps organizations achieve and maintain a single view of master data across an entire enterprise, enabling business and IT initiatives to perform in better unison, allowing for opportunities to increase revenue, reduce costs, achieve effective compliance, reduce risk and improve business agility.”

Chad Eschinger, Research Director, Gartner Master Data Management Summit, November 2008

For both public sector and commercial enterprises, Master Data Management (MDM) has emerged as a key enabler to address challenges stemming from data fragmentation, siloed systems, inconsistent processes, and complex architectures.

Fragmented, inconsistent data affects the ability to appropriately serve constituents, delays time to implement new applications, creates integration inefficiencies across processes, and limits productivity across citizen service functions. When customer or citizen data is duplicated, is incomplete or inaccurate, public sector entities find difficulties in:

- 1) Services Delivery
- 2) Citizen Information Management
- 3) Benefits Eligibility
- 4) Vendor Records & Supplier Relationship Management
- 5) Revenue Collections
- 6) Policy Compliance, Risk management, and
- 7) Financial Controls

As a result, new risks get introduced, policies lack effectiveness, and citizen loyalty/trust is lost.

Typically within public sector, the IT landscape consists of a complex set of disparate systems and technologies, including Customer Relationship Management (CRM), Enterprise Resource Planning (ERP) and Supply Chain Management (SCM). This complex, fragmented environment of disparate systems and applications creates proliferating islands of information. These islands result in duplicate, incomplete and inaccurate data that leads to inappropriate analytics and, ultimately, inaccurate business decisions.

All these factors lead to serious data quality problems, thereby negatively impacting the government’s ability to make strategic investment and resourcing decisions, maintain proper

governance, run efficient processes, mitigate risk, and provide accurate timely compliance reports. The ultimate costs can sum in the billions of dollars.

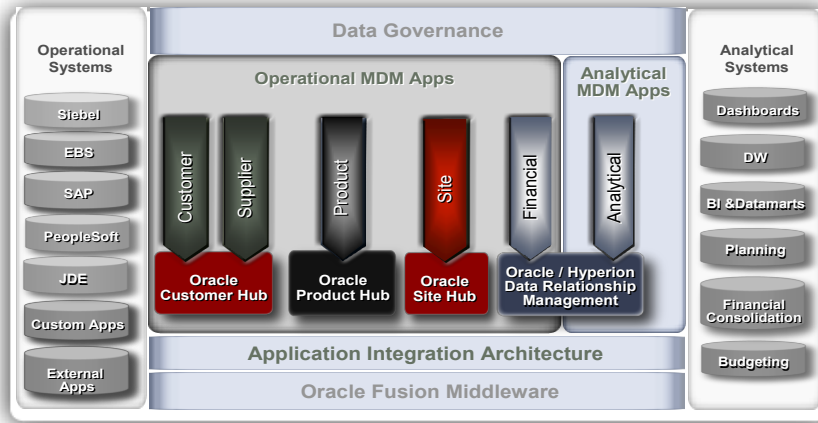


Figure 1: Oracle MDM Solutions

Oracle MDM offers the most complete MDM application suite in the marketplace, covering multiple domains across operational and analytical MDM

The Importance of MDM within Public Sector?

While data quality issues exist across all industries and even though each industry has its unique requirements, the problems are more exacerbated in the public sector – this is primarily due to “separate” agencies functioning independently and/or siloed reporting spread across local, state, and national boundaries, not to mention heterogeneous systems, non-integrated processes, and fragmented data. The issue with data quality is that as data continues to grow exponentially, so does the data quality problem requiring additional staff to fix, update, de-dupe, match, and share the data across the organization.

Public Sector

The public sector space is comprised of different segments, i.e. Defense, Justice, Public Safety, National, State, and Local Government. They each have different challenges, but the common theme for these different segments is the need for efficiency, visibility, and transparency. Take for instance, a parent that is not making alimony payments, and is applying for a passport. Having a single view of the citizen, would enable agencies to make the appropriate decision and enforce the payment collection before issuing any new documentation. Furthermore, there are productivity gains to be achieved by having faster access to information. Data residing in multiple systems can be leveraged in case management and CRM systems, supported by MDM solutions, to get a single view of the constituents (taxpayer, citizen, service provider, etc.)

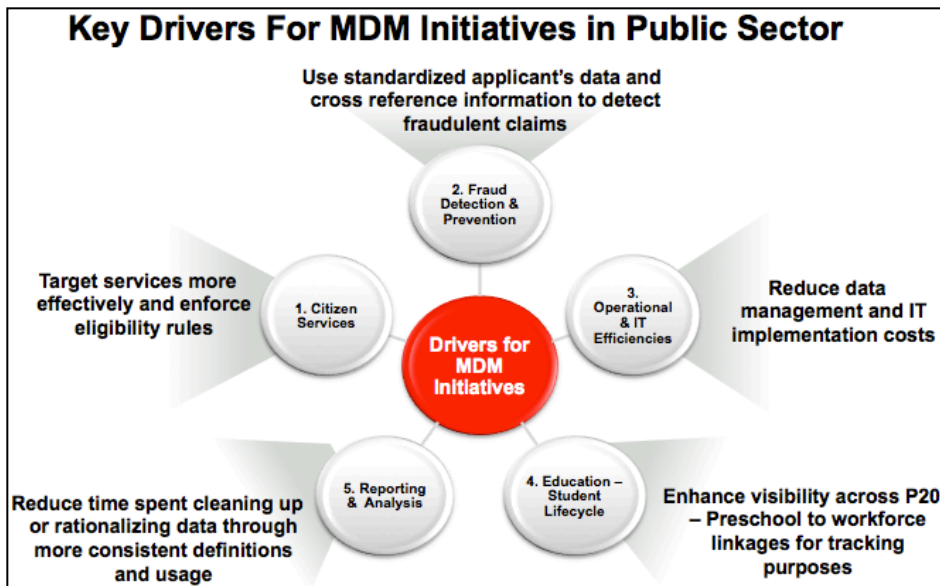


Figure 2: MDM-relevant Public Sector Initiatives

MDM capabilities are foundational to driving greater value from many public sector initiatives

One of the ways to help with some of these challenges is to focus on constituent-centric processes and to synchronize this data across all source and consuming systems – MDM provides capabilities required to rationalize the data used in these processes.

Furthermore, managing sensitive/critical information across silos becomes critical, and with the explosion of data volume and growing data complexity that governmental institutions are experiencing today, this problem is intensifying.

MDM also provides a reliable foundation to support changes and updates in policies and mandates to help avoid penalties or more severe regulatory actions. With cleaner, de-duplicated citizen data, public sector organizations can strive to meet compliance targets.

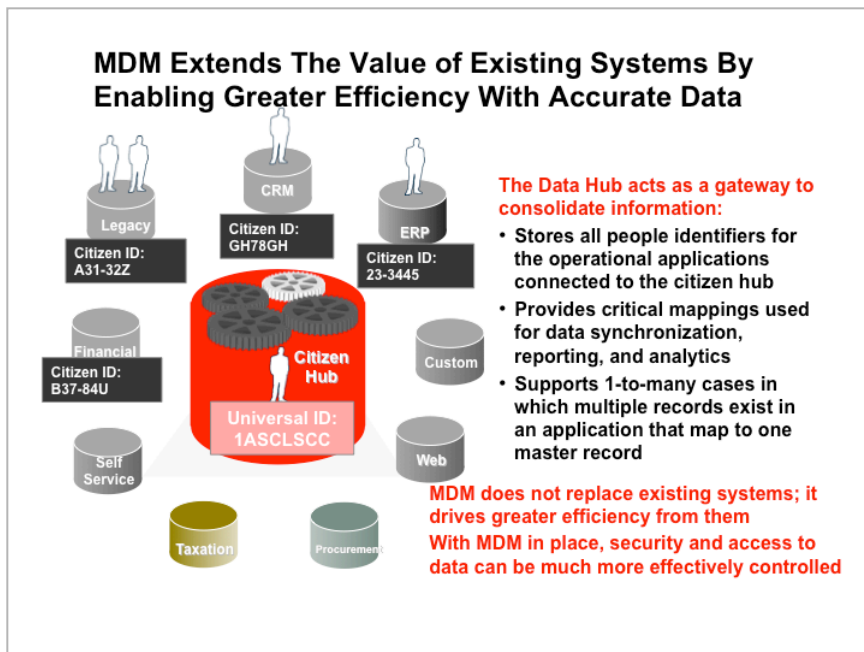


Figure 3: Universal Constituent ID

Since constituents are increasingly demanding next generation services tailored to their needs, having a robust data management strategy, supported by world-class MDM solutions, can enable informed, expedient, and accurate customer service design and delivery – where bundled services and a citizen-centric view is critical as outlined in six case-in-points below:

Case in Point 1: Identify beneficiaries of state and local government programs, for example periodically check residency status.

Case in Point 2: Single source of item, part and asset information; greater control over supply chain process; better spares provisioning and planning analysis; reduced supplier management and procurement costs.

Case in Point 3: 360-degree view of taxpayer; ability to find all tax entities and related locations across districts/zones; consolidation of tax balances (debt vs. refunds)

Case in Point 4: Capture information across several police & intelligence databases; achieve effective law enforcement

Case in Point 5: Enabling streamlined initiatives for Census, Real-Estate, Vehicle, Business licensing and registration

Case in Point 6: Customer/Resident/Visitor identification, licensing, and registration for compliance

Why build a business case for MDM?

The need to deliver more business value from IT

Today’s IT budget is spent mostly on “keeping the lights on”. In fact, roughly 70% of the budget is spent on sustaining and running existing capability while only 30% is spent on providing new capabilities to the enterprise¹. The business users, together with IT, need to find ways to increase the value created by both existing and new investments in IT. The ideal allocation of the IT budget would be to spend roughly 55% on existing capability and 45% on new capabilities that create value for the business².

Even within the IT budget being spent on supporting existing capabilities, MDM-driven opportunities abound:

IT Value Drivers Can Help Identify MDM Opportunities	
Value Driver	Benefits
Reduced IT Project Time To Completion	<ul style="list-style-type: none"> Automated Constituent Data Processing Eliminate Data Quality Issues Reduce Implementation Time Risk Reduction for Projects Quicker ROI achievement CRM/ERP Future IT Maintenance Cost Reduction
Reduced IT Integration Costs	<ul style="list-style-type: none"> Significant Integration Cost Reduction Future Upgrade Cost Reduction Better Cross System Processing/Sync Hub and Spoke System Approach Centralized Single Source of Truth Lower IT Maintenance Costs
Decreased Data Management Costs	<ul style="list-style-type: none"> Eliminate Data Replication (Virtual Data) 360 Degree View for All Point Systems Automated Data Quality Monitoring Centralized Data Access Control Pre-Built Data Governance Reduced Integration and Maint. Costs
Reduced Report Generation Costs	<ul style="list-style-type: none"> Customer Master Creates Better Reports Automated Customer Hierarchy Clean Data Increases Report Accuracy Faster Response Time for Queries Reduce IT Spend on Report Generation Minimal Effort to Pull Data from Sources
Increased Revenue & Decrease Risk	<ul style="list-style-type: none"> Faster ROI for CRM & ERP Deployments Increase User Adoption with Quality Data Accurate Global Performance Visibility Quicker Project Deployments Reduce Project Cost Overruns Single Data and Integration Effort

Figure 4: IT Value From MDM

¹ Gartner – “Making the Difference : The 2008 CIO Agenda” (Jan 2008)

² TDWI – December 2002

The business impact of bad data

The Data Warehousing Institute estimates that data quality problems cost U.S. businesses more than \$600 billion a year.² Yet, many decision-makers may be unaware of the data quality issues that are slowly eroding the value of their organizations. More detrimental than the unnecessary printing, postage, and staffing costs is the slow but steady erosion of an organization’s credibility among constituents and stakeholders, as well as its inability to leverage business intelligence investments, and make sound decisions based on accurate information.

Furthermore, the #1 reason why CRM projects fail to deliver on the promised value is due to poor data quality, which leads to poor user adoption. Users will not use systems that do not provide them accurate information, and tend to continue using whichever tool they had before that helped them do their job. This issue is not limited to the front office systems; ERP, SCM, etc. have the same issues.

Quantifying the business value

Now more than ever, both public sector and commercial entities are required to demonstrate value from IT investments in order to get their initiatives prioritized against competing ones. In a budgetary environment where many initiatives are competing for the same funds, only the most compelling business cases will win. Technologists have to quantify both cost reductions and cost avoidance, in addition to any qualitative benefits.

Public Sector Segments Where MDM Can Drive Significant Impact	
Social Services	<ul style="list-style-type: none"> • Ensure compliance and eligibility enforcement for services rendered • Better services to the citizens/constituents and more self service capabilities • Maintain complex child information with multiple custodial relationships.
Justice and Public Safety	<ul style="list-style-type: none"> • Search for constituents/citizens across multiple systems/agencies • Identity resolution for citizens • Leverage information sharing, delivery, discovery and mining
Education	<ul style="list-style-type: none"> • Missed Recruitment • Missed Fundraising/cross-sell / up-sell • Missed Retention
Revenue Collection	<ul style="list-style-type: none"> • Single view of taxpayer / citizen • Ensure accurate picture of total tax liability by each entity • Case management
Security and Defense	<ul style="list-style-type: none"> • Force readiness • Logistics Modernization • Network centric operations
Healthcare	<ul style="list-style-type: none"> • Need single view of citizen/physician • Ensure right benefits to illegible beneficiaries

Figure 5: MDM Opportunities Drive Benefits in the Public Sector

MDM is a journey

Master Data Management programs should be as an enterprise-wide initiative. However, it is often difficult to start the initiative across the entire enterprise. The key is to embark upon tactical projects that are aligned with an overall vision for MDM. Pick a starting point with limited scope that proves the technical approach and delivers quick benefits. For example, the starting point could be mastering citizen data from a limited number of systems within a specific agency or department. This helps put together the technical foundation of the hub and gain experience with limited but controlled data stewardship. Of course, care should be taken that even this limited project brings measurable benefits.

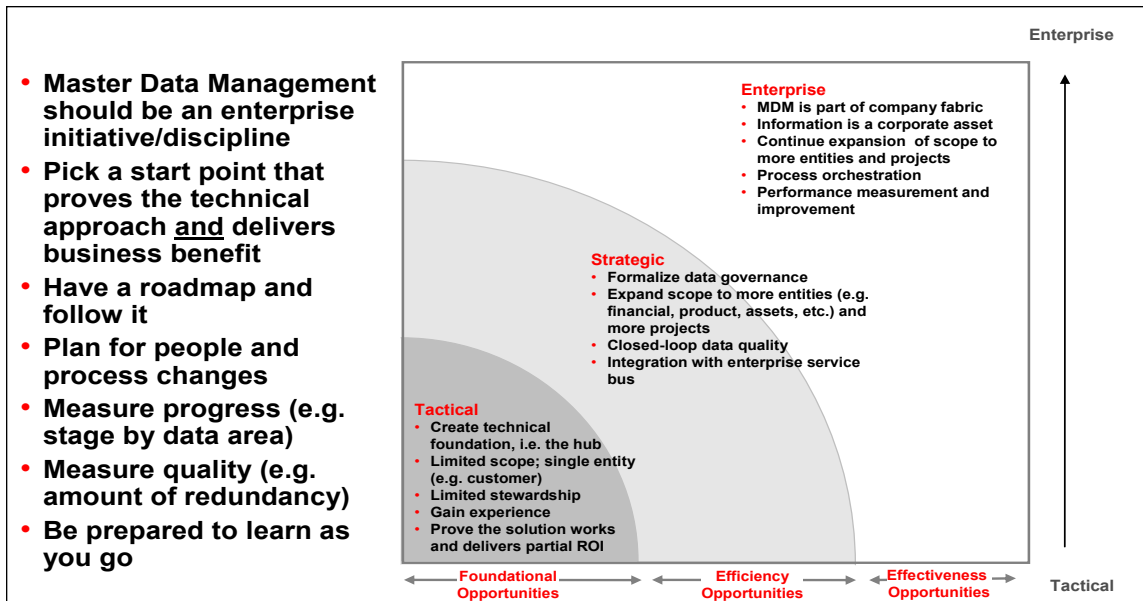


Figure 6: MDM Evolution - start small, think big, measure and evolve

Once the first tactical trial of MDM proves successful, initiative-owners should quickly assemble the lessons learned and develop a longer-range strategic vision for MDM across the organization. It is important to develop a roadmap outlining the enterprise MDM architecture, complete with the source and target systems, and identify the scope of the entities to be covered in the next round of MDM implementations. For example, the decision could be whether to implement both citizen and supplier masters, and, even within citizen and supplier domains, whether to plan for mastering the data function by function or to go by mastering one source system after another. Outlining each potential option and calculating the value of each option helps drive the decision on which option to choose.

Three important tasks to accomplish in this strategic step are to: 1) formalize a data governance methodology, 2) create a closed loop data quality framework and 3) measure the benefits of MDM implementations with each significant phase. Once that is achieved, along

with the implementation of the enterprise MDM architecture, the MDM journey will start taking the desired shape. Socializing the enterprise-wide MDM philosophy and vision is also important for enterprise-wide adoption of the MDM philosophy – to ensure MDM becomes part of the organization’s fabric – where information is identified as an organizational asset and hence more domains of information are brought under the MDM umbrella. More MDM projects are identified in the organization and the scope of existing implementations is expanded. Performance benchmarking and measuring the continuous improvement in performance becomes part of the norm.

Following this step-by-step process in the MDM journey provides a suitable and achievable goal of enterprise MDM implementation.

It should also be noted that adopting an MDM strategy would require process change and impact the day-to-day workings of many people. Bringing this change to the enterprise requires careful planning and a well-thought-out process to manage the change effort. Visible leadership involvement and commitment, in addition to regular communications/updates, and detailed progress monitoring are critical to ensure the needed momentum is maintained. Continued buy-in is only possible by documenting/promoting successes, ensuring MDM projects remain on track (from budget, resource, and timeline perspectives), and MDM owners and stakeholders (within and outside of IT) remain accountable.

How to build your business case for MDM



Figure 7: Approach to building your business case

The approach to building the business case requires three steps:

- The first step is to assess the current data mastering capabilities. During this step, one should assess the MDM maturity of the entities in scope. In order to quantify the impact of the MDM technology, it is important to have a robust and agreed-upon baseline upfront to serve as a relative point of comparison down the road.
- The second step involves envisioning the future data mastering capabilities and the solution footprint to support them. In addition, it is important to define the implementation plan and understand the cost of implementation. This is required to define the investment required.
- The third step is where we truly understand the benefits of the MDM technology driving cost savings, and qualitative improvements. It is during this stage that we quantify the value of the technology. Using the investments from step 2 and the quantified business value in step 3 we are ready to calculate the ROI for MDM.

Step 1: Assess Maturity of MDM Capabilities

Master Data Management – Analysis Framework				
Top-Level Discussion Framework				
PROFILE DATA SOURCES	DEFINE DATA STRATEGY	DEFINE CONSOLIDATION STRATEGY	MAINTAIN DATA	PUBLISH / UTILIZE DATA
Inventory of Data Sources	Data Strategy and Usage Objectives	Operational Data Model	Standardization	Subscription / Syndication
Quality of Data Assessment	Data Governance	Integration	Matching	Data Integration
Data Scope (What to Collect)	Security and Control	Cross Referencing	Cleansing and Normalization	Validation
Data Definition Harmonization	Data Structure and Policies	Synchronization Policies	Quality Monitoring	Access and Security
Data Stewardship				

Figure 8: Framework for MDM Maturity

Strategic analysis framework developed by Oracle based on the lifecycle of data management.

After understanding the current capabilities, it is time to assess them for MDM Maturity. MDM Maturity can be assessed across five dimensions:

Profile data sources

Inventory of data sources, policies, requirements, and security controls

Define data strategy

Strategy on how data will be used by the users, and existence of a governance structure to manage data quality

Define Consolidation Strategy

Mechanisms for sharing master data across applications, either in batch or real-time mode

Maintain data

Data stewardship and tools in place for ensuring that the data is kept clean

Publish Data

Data is published and made available to the subscribing applications, enforcing data policies for Create, Read, Update and Delete (CRUD) activities.

These dimensions can be assessed using a simple capability maturity model (CMM) to identify the areas with the largest gaps.

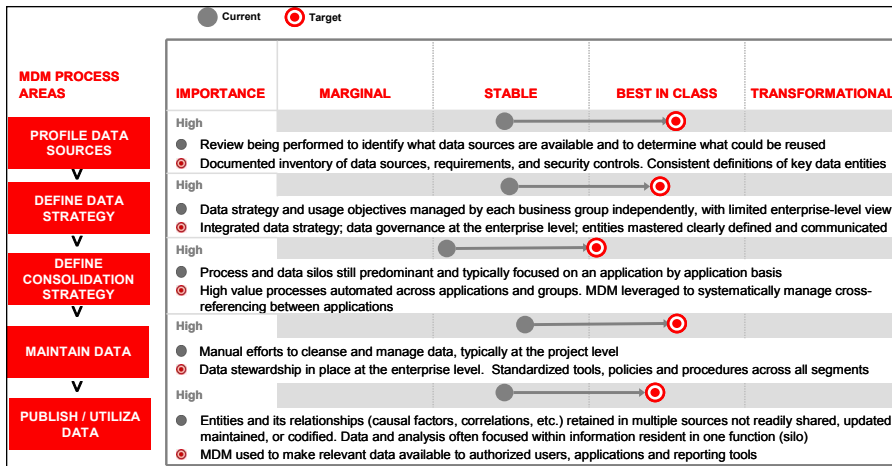


Figure 9: MDM Maturity CMM

The figure above is a depiction of a capability maturity model which is used to assess each of the five dimensions to establish where you are today and then plot the desired end state to

identify where the largest capability gaps exist. This will help to prioritize the focus areas for the implementation plan.

Step 2: Develop Solution Footprint & Implementation Plan

Once the capability gaps have been identified and the target state defined, the next task during this step is to define the future state architecture to support the new process or processes. The figure below is a sample of a future state architecture using Oracle’s MDM technology.

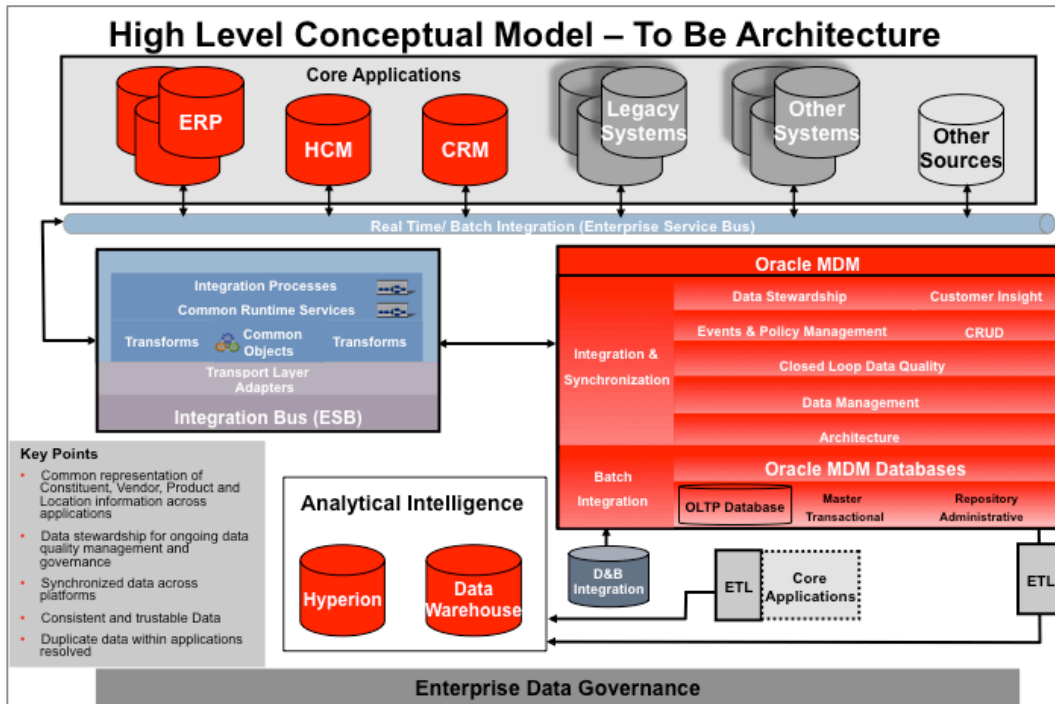


Figure 10: Sample Solution Architecture

After envisioning the future state process and defining the future state architecture to support it, the most critical task is to define the implementation plan to ensure a successful implementation of the new process. The figure below is a sample of an implementation plan showing different phases, stages within the phases and different deployment waves.

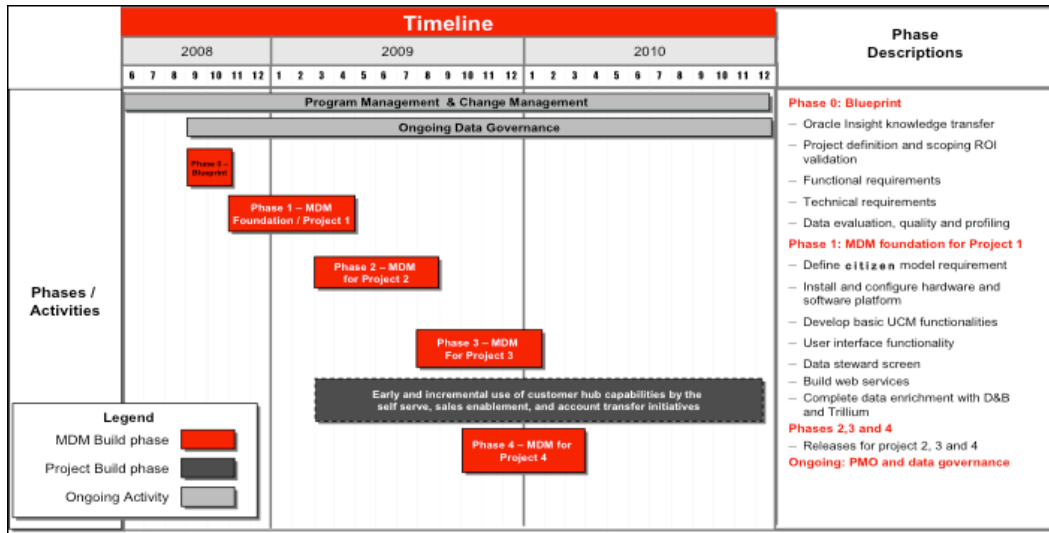


Figure 11: Sample Implementation Plan

Step 3: Identify Benefit Drivers & Calculate ROI

In our experience implementing MDM with both commercial and public sector customers, we have observed that benefits are derived both from cost savings/increased efficiency and revenue enhancement perspectives. Some benefits are attributed *directly* to MDM, such as reduced data management costs, reduced integration costs; and some benefits are attributed *indirectly* by providing incremental value to existing initiatives such as increased productivity through effective case management, for example, in immigration enforcement, or improved tax collections, etc. Take a critical look at the figure below summarizing typical MDM

benefits; some of these may have unique relevance to your MDM scope:

Category	Benefit Opportunity	Drivers
Effectiveness	Improved Call Center Productivity	Decreased time to support incoming/outgoing calls (time to search right record, id customers, time gather background, history, and asset information, etc.)
	Reduced Mailing Costs	Reduction in mailings going to wrong on invalid addresses
Efficiency	Reduced Reporting Costs	Reduced number of resources and activities required to gather, validate, format, and publish master data for transactional, operational, financial, and analytical reporting
	Reduced Data Management Costs	Reduced number of tasks required to 1) re-enter master data for customer, supplier, product, 2) validate master data, and 3) rationalize master data
IT Agility	Reduced Time To Market For New Applications	Centralized function of consolidating, cleansing, de-duplicating master data in one system that is leveraged by every new application, IT project, thereby reducing implementation time
	Reduced Integration Costs	Reduced requirement to correct errors, integrate/publish master data across systems
Compliance	Reduced Credit Risk	Single customer/citizen view across silos leading to reduced risk exposure; enriched data using 3 rd -party info like credit rating score from D&B
	Reduced Risk of Non-Compliance	Improved complete view of key business data & processes; foundation for managing regulatory compliance

Figure 12: MDM Improvement Metrics

Once the appropriate benefit drivers for your particular project have been identified, the next step is to estimate the range of benefit improvement that will be gained for the drivers identified. This is critical in quantifying the business value of MDM. Since MDM technology can directly impact process throughput, cycle-time, and quality, cost savings via productivity/efficiency gains is a standard benefit. Depending on your context and situation, MDM technology can also help drive revenue growth via improved understanding of constituent needs translated into unique offers.

One key aspect of any solid business case is “validation”. Here the goal is to ensure the quantified benefits make practical sense (through discussions with process owners), appear sensible (in the context of the organizational goals, etc.), well reasoned (logically structured), and most importantly, documented for assumptions, estimates, and data sources. Good validation at this stage will help “justify” the case to anyone who is interested.

MDM Benefits			
BENEFIT OPPORTUNITY	CONSERVATIVE	PRAGMATIC	AGGRESSIVE
1) Improved Call Center Productivity	\$1.5M	\$2M	\$2.5M
2) Reduced Mailing Costs	\$750K	\$1M	\$1.25M
3) Reduced Reporting Costs	\$250K	\$500K	\$750K
4) Reduced Data Management Costs	\$2M	\$3M	\$4M
5) Reduced Time To Market for New Applications	\$1M	\$2M	\$3M
6) Reduced Integration Costs	\$900K	\$1.8M	\$2.4M
7) Reduced Credit Risk	\$3M	\$6M	\$9M
8) Reduced Risk of Non-Compliance	\$1M	\$2M	\$3M
Total Annual Steady-State Benefits	\$10.4M	\$18.3M	\$25.9M

Figure 13: MDM benefit quantification

The figure above shows the quantification of the benefits. In this example we have chosen to give conservative, pragmatic and aggressive estimates of the benefit values. In addition to quantitative benefits, MDM projects will also yield many qualitative benefits. These should be documented and included to strengthen the business case.

MDM Costs

The other key input is the associated investments with acquiring and deploying the MDM technology. The typical costs include software licensing, software maintenance, implementation, hardware, infrastructure, training and other associated costs. The figure below gives a sample of how the costs can be broken out.

Estimated MDM Costs		
CATEGORY	ONE-TIME	ANNUAL
Software		
1) Application Licenses	\$10M	
2) Annual Maintenance		\$2.2M
Implementation		
3) Implementation of Existing Software	\$1M	\$M
4) Implementation of New Software	\$6M	\$M
Hardware / Infrastructure		
5) New Hardware/Infrastructure	\$2M	\$0.4M
Other Costs		
6) Training / Change Management	\$1M	\$0.1M
7) Other (Travel, Administration, etc.)	\$0.5M	\$0.2M
Total	\$20.5M	\$2.9M

Notes:

- Costs are provided at estimates, based on customer data; Costs do not factor fixed cost of employees assigned to project; Implementation estimates are provided by the customer

Figure 14: Estimated MDM Associated Costs

Once the benefits and costs have been documented, what remains is the calculation of net benefits. This is the final step in the business case process – if you have logically and methodically followed the process outlined thus far, all you now need to do is subtract the costs (of the project) from the benefits (of the project).

Cash flow and ROI Analysis

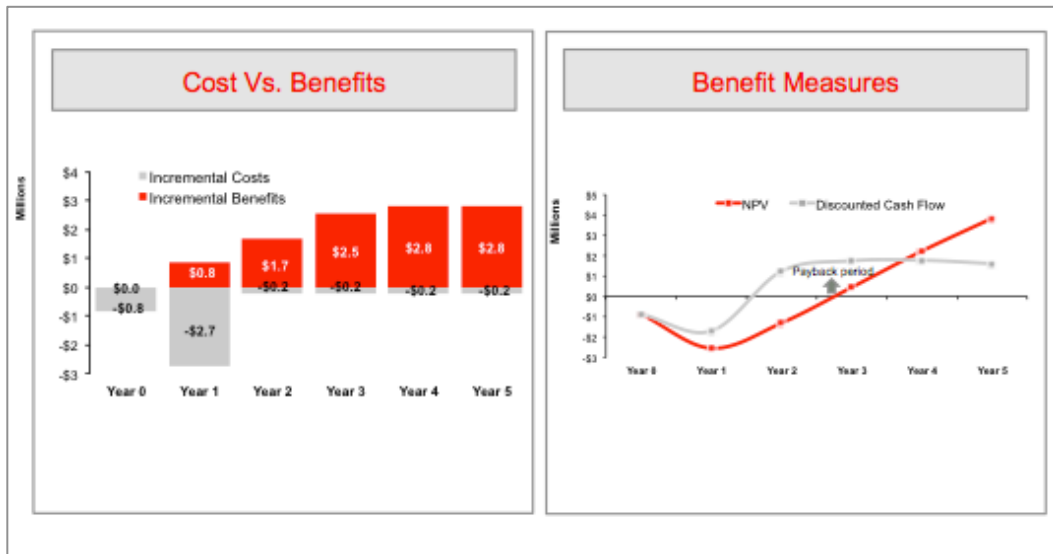


Figure 15: Cash Flow and Benefits Analysis

Typically, this type of analysis spans a 3-5 year horizon. Please note that not all the benefits identified in this document may be quantifiable at first, however, through involving stakeholders from impacted areas, estimating impact, and agreeing on cost allocations, getting closer to a true benefits picture is possible.

How can Oracle help?

Oracle Insight Program³

Oracle Insight uses a proven methodology, which is flexible and customized to individual organization objectives. Most engagements consist of four steps: Industry Perspective, Discovery, Solution Design, and Solution Presentation.

Industry Perspective

Given the many acquisitions made by Oracle, we want to help you understand how these new capabilities have helped others inside/outside public sector. Oracle facilitates an in-depth discussion with your executives about industry trends, best practices, vision, strategy, challenges and roadblocks.

Discovery

Leveraging established frameworks and robust intellectual property, we assess your current business processes and identify the capabilities required to achieve your organization's strategy. We will compare you to cross-industry benchmarks and identify both the qualitative and the quantitative benefits from enabling those capabilities.

The Oracle Insight team will come to at your site, and, through a series of discussions, determine which capabilities are needed to achieve your group's/agency's/organization's strategic goals. Then, the team will connect those capabilities with the best solutions that meet your unique context, situation, and requirements. As part of the process, the team may review software configurations and installations, and recommends methods to help get the most value from the software.

Solution Design

³ <http://www.oracle.com/services/insight/how.html>

Oracle recommends best practice processes and supporting technology, including a time-to-benefit analysis and implementation plan.

Solution Presentation

The Insight team works with you to create an executive presentation including supporting information, business benefits, and value drivers, to help you build consensus.

CONCLUSION

“...IT investments deliver more value to a company’s top and bottom lines – by creating new efficiencies and increasing revenues – than any savings gained from traditional IT cost cutting”

-McKinsey, September 2008

The impact of poor data quality is widespread in any organization; public sector entities are no different. With the rising cost of delivering constituent services, lack of organizational agility/flexibility, and difficulty in preventing fraud, MDM is one of those technologies that delivers significant and lasting value to the organization by addressing these challenges through...

- Consolidation of information into a single master repository
- Cleansing and enriching data centrally
- Governing data as a single point of truth for a consistent and complete view
- Sharing master data with consuming applications, processes, and decision support systems

However, this value must be quantified for the organization to demonstrate the specific impact that will be delivered through an MDM initiative.

A compelling business case is needed to provide the motivation and prioritization for MDM projects. The approach to such a business case involves assessing the current business process and its performance, designing the future process and the solution footprint to support it, and identifying the benefit drivers.

Many of our customers have seen substantial returns from their MDM projects; this paper discusses the fundamentals of how to develop a business case for MDM in the public sector – a prerequisite to securing “approval” for MDM programs aimed at improving citizen services, preventing/detecting fraud, improving operational & reporting efficiencies, and ultimately delivering greater transparency and visibility.



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Master Data Management in the Public Sector**

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