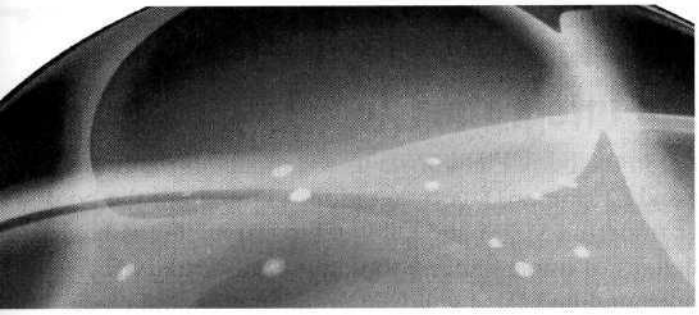

CHAPTER

# 18

# Where Do We Go from Here?

**IN THIS CHAPTER**

# Master Data Management and Customer Data Integration Today

We have arrived at the point in the book that allows us to talk about the future of Master Data Management and Customer Data Integration. Throughout the book, we have used various ways to define MDM and CDI and to articulate the business drivers and technical challenges of implementing these types of initiatives. We showed the complexities surrounding MDM and CDI architecture, paid close attention to often-overlooked issues of data security and visibility, and shared the authors' personal experiences in addressing implementation concerns on a number of MDM and CDI projects across several industries.

Here is a brief summary of the key points we covered in the preceding chapters:

- The key terms used in the area of Customer Data Integration, specifically, the terms "customer" and "party," mean much more than just simply a single individual that an enterprise considers a customer. In fact, these are somewhat generic and abstract terms that include individual customers, prospects, or business entities that are the "customers" of an enterprise's line of business (for example, small businesses can be customers of a retirement plan service provider, with their employees representing an additional level of customer details). Therefore, the term Customer can and usually is replaced by industry-specific or line-of-business–specific terms such as: Client, Contact, Party, Counterparty, Patient, Subscriber, Supplier, Prospect, Service Provider, Citizen, Guest, Legal Entity, Trust, Business Entity, and other terms.
- The ability to recognize individual entities as members of arbitrary complex groups (e.g., households and extended families for individuals, holding companies, and other organizational hierarchies for business entities such as corporations) is one of the key properties of Master Data Management, and applies equally well to Customer Data Integration solutions, Reference Data Management, Product Master Hubs, etc., with the complexity of the associations and grouping depending in large part on the completeness and accuracy of data and the business rules driving the resolution of conflicting or undetermined links.
- Master Data Management is a horizontal technology that applies equally well to all industries and markets and is global in nature. The latter point has two equally important aspects:
  - MDM and its customer-centric version known as Customer Data Integration are especially effective in modernizing a global enterprise.
  - The need for an authoritative, accurate, timely, and secure "single version of the truth" is pervasive and is not particular to a specific country or geography.

- Customer Data Integration, while evolutionary from the pure technological point of view, is revolutionary in its potential business impact of transforming the enterprise into a customer-centric model. In that, CDI represents a particularly interesting opportunity to any customer or citizen facing organizations including commercial businesses and government agencies alike.
- Master Data Management and Customer Data Integration can enable an enterprise to achieve sustainable competitive advantage by improving levels of customer service and overall customer experience, reducing the attrition rates, growing customer-based revenue as a share of their wallet by understanding and leveraging the totality of customer relationships with the enterprise, and helping the enterprise to be in a better position to achieve regulatory compliance, to name just a few.
- MDM-CDI can be extremely beneficial to various government agencies and businesses not only from a customer service point of view but also in helping law enforcement agencies in threat detection and prevention.
- MDM and CDI technical approaches and challenges include:
  - Building an MDM-CDI solution as an instance of a Service-Oriented Architecture (SOA)
  - Building CDI solutions to utilize Web Services as the insulation vehicle between new master data, legacy data stores, business processes, and applications
  - Addressing data governance and data quality issues
  - Defining and applying accurate matching algorithms for batch and real-time processing
  - Defining and applying survivorship rules for the "single version of truth" record
  - Solving complex data synchronization and reconciliation issues
  - Considering the complexity of new, CDI-enabled business transactions that span systems and applications not only within the enterprise but also across system domains of its business partners
  - Addressing the scalability challenges of data volumes, transactional throughput, and structured and unstructured data types
  - Enabling robust process controls to support audit and compliance reporting
  - Designing effective approaches to protecting access to the integrated data as well as to the services and applications that can access that data—fine-grained access controls and policy- and entitlements-driven data visibility and security

- There are many CDI implementation challenges, and a typical CDI project may start small but inevitably grows into a large, multidisciplinary, enterprise-wide, complex, time-consuming initiative that requires a significant investment of time, resources, and money, and therefore, a senior, often executive-level organizational commitment, and obtaining such a commitment is not an easy task.

We also learned that addressing the points in the preceding list does not guarantee that a CDI or MDM project will be a success. Today, we know of several predominant reasons why CDI initiatives fail.

## Main Reasons CDI Projects Fail

Master Data Management in general, and Customer Data Integration projects in particular, represent significant enterprise-wide undertakings that rely on and impact four pillars of successful CDI initiatives: business processes, people, organizational structure, and technology. These four pillars of CDI are needed to maintain the balance—break one pillar, and the entire CDI "house" may fall! Let's review some of the key reasons why CDI projects may fail:

- **Lack of executive support and budgetary commitment** As we mentioned several times, CDI initiatives can succeed only if there is executive-level support. This is the key since many CDI projects tend to become very large very quickly and last longer than a few months. Even though signing checks is critical, senior management commitment must go beyond that. Senior management must understand the key benefits, dependencies, release scope and timing, high-level risks, and trade-offs the project is facing.
- **Lack of coordination and cooperation between business and technology organizations** The complexity, size, and the implementation risk of CDI initiatives require close coordination and cooperation between business and technology organizations involved in the CDI initiative not only in order to achieve the goals of the project but also to reach an agreement that these goals have been met. All too often a business unit defines the high-level business requirements for a CDI solution and passes them on to the technology team to implement. The technology team analyzes the requirements and their technical feasibility, and defines the plan, the approach, the architecture, infrastructure, and tools required to deliver what has been requested by the business. However, sometimes the requirements are expressed in such high-level terms that their technical implications are not apparent to the business and technology organizations. Without a continuous joint effort to address the potential ambiguity of the requirements, the technology team may create a project plan that, from the business-unit point of view, is too long, too expensive, and does not deliver

what the business sees as a timely value proposition. Without proper cooperation and coordination, this disconnect may be "discovered" several months into the project with the money already spent and no recognizable return on investment. A potential outcome might be the withdrawal of business support and funding that would lead to cancellation of the project for failure to deliver.

- **Lack of consuming applications** The old adage "if we build it they will come" does not always work in the case of Master Data Management and Customer Data Integration. MDM and CDI projects are often positioned as infrastructure projects, and here lies the danger. Typically, an infrastructure initiative becomes "visible" only when the organization experiences an infrastructure-type problem, for example, the enterprise network is not available and a major application or web server is down, etc. Successful infrastructure projects keep enterprises "alive" but are rarely appreciated unless a problem occurs. MDM and CDI projects hold a promise of significant business benefits and thus should not be invisible. To put it another way, it is very difficult to demonstrate the value and the benefits of a CDI solution if there are no applications and no end users that can take advantage of these new capabilities. Inability to demonstrate value may result in a negative perception of a project as a failure, with the project stakeholders withdrawing their support and looking for alternative solutions. For example, bundling CDI with customer on-boarding and account opening process can clearly demonstrate significant value and at the same time improve quality of CDI-enabled applications and processes. In this case, the added value becomes clear since the business community obtains a new, more efficient, and highly-visible account opening application. The increase in quality is driven by a single source customer profile data that is used during account opening, which results in improved data quality and reduced data redundancy.
- **Lack of user adoption** This reason is closely related to the preceding one. One of the impacts of a CDI project is the ability to view, use, and manage critical enterprise data differently, possibly using different applications and business processes. That requires not only the availability of new consuming applications that can take advantage of the CDI solution, but also an educated and trained end-user community. End-user education should start as soon as the project is approved. Training is another critical area of user adoption. Training performed too early is not effective since the end users may forget what they learned by the time the system is in production. In addition, training should be flexible enough to accommodate users with different levels of computer literacy, from novices to "power" users.
- **Underestimating or not considering impact of legacy** Many CDI implementations have to be developed and deployed into already-established enterprise system environments, and therefore have to deal with existing data sources and applications. While the need for an accurate, timely, and

authoritative system of record is understood and shared by both business and technical teams, it is often the case that an application area in charge of an existing customer data store such as a data warehouse, CIF, or specialized customer file would consider extending existing customer data stores and consuming applications as well as attempting to improve data quality in a tactical fashion by focusing on the local data stores. In addition, the legacy system owners may put forward an argument that since their legacy solution is already in place, there is no need for additional system integration between the customer files and downstream systems. In short, a legacy extension and modernization approach may present a tactical alternative to a CDI solution that can be perceived by the management as a lower-risk approach. The CDI project team needs to assess the impact of the incremental system integration effort required to deploy a new CDI platform into the existing system environment, understand the potential shortcomings of legacy-based tactical solutions, and develop a CDI business case that would create compelling strategic arguments for a CDI solution.

- **Failing to socialize CDI throughout the enterprise** CDI projects can affect practically every department in an enterprise. Therefore, CDI project owners must be also CDI evangelists and social champions who continuously work toward obtaining and maintaining enterprise-wide support, making sure that the project plan is built using realistic timelines and appropriate resources and budget. Effectively socializing the project's goals and benefits would ensure the proper level of stakeholder involvement from awareness to understanding and ownership.
- **Lack of a comprehensive, service-oriented CDI architecture** As CDI projects grow up from their initial pilot implementations, they need to be architected to be easily integrated with the enterprise architecture. This requirement is easy to understand if you consider that the goal of any CDI project is to create an authoritative, accurate, and most importantly, enterprise-wide system of record. So, leveraging enterprise legacy infrastructure and applications, interoperability, performance, scalability, and security are only a few aspects that have to be addressed. Using a comprehensive architecture framework to build service-oriented CDI solution helps decouple end-user business applications from the structure and physical location of the customer data stores and thus helps reduce data and functional redundancy and provides the flexibility, scalability, and adaptability of the CDI solution.
- **Choosing the CDI data model poorly** A choice between a vendor-provided data model and the custom data model developed in-house could spell the difference between success and failure of the project. This choice has to be made carefully and in the context of the enterprise business strategy and capability requirements.

- **Lack of the data governance strategy that includes well-defined data stewardship and formally managed data quality program** This reason is practically self-explanatory; without proper measurable data quality the CDI solution would be an integration point of inaccurate or incomplete data, which makes its usefulness questionable.
- **Project staffing** The complexity and multidisciplinary nature of Master Data Management and Customer Data Integration initiatives requires availability of a properly trained, knowledgeable cross-functional project team that has the appropriate number and the correct mix of subject matter experts, managers, planners, application developers, data analysts, database administrators, infrastructure designers, testers, and representatives of the business teams. Such a complex undertaking can be successful only if the project team has a respected, strong project leader who can also act as a visionary and evangelist who continues to reinforce the business value messages and to maintain effective collaboration and socialization among the team members.

# Master Data Management and Customer Data Integration: Trends and Directions

Master Data Management and Customer Data Integration solutions are still relatively new, and the road ahead has unexpected turns, peaks, and valleys. At the present time, the market for MDM and CDI solutions appears to be growing fast, and there are numerous research reports and surveys indicating current and future market size in term of total expenditure and vendor revenue. However, the financial side does not necessarily indicate the direction that MDM-CDI would take going into the future.

It is hard to predict the future, and this is certainly true in the case of Master Data Management and Customer Data Integration. Nevertheless, there are a number of research reports from various industry analysts that attempt to define market trends with various degrees of accuracy. One of the better sources of such information is the CDI Institute's 2007 Strategic Planning Assumptions report titled "2007-2008 MDM Milestones". While reports like the one from the CDI Institute offer interesting insights into the MDM-CDI market trends, we would like to offer a slightly different view of these trends based on authors' experience and analysis of where the relevant MDM-CDI technologies, market practitioners, and vendors are headed.

- MDM-CDI Market Trends
  - Companies will concentrate their CDI activities on the enterprise transformation toward customer-centricity not just by implementing a CDI Data Hub but also by starting business process and applications re-engineering and by developing new, more customer-centric, and user-friendly processes and applications.

- External reference data providers and their "trusted" data sources and services will play a more prominent role in MDM and CDI implementations. Companies such as Dun & Bradstreet, Acxiom, Lexus-Nexus, Transunion, and Experian are a few examples of these data providers. Although these companies may not offer complete CDI solutions, they will certainly be positioned to become key players in the data cleansing, rationalization, enrichment, and linking and matching space.
- Customer Data Integration solutions will proliferate throughout various industry segments but will maintain an industry-specific implementation and technology flavor; for example, financial services companies will focus on achieving a near-real-time complete customer view while life sciences/ pharmaceutical companies may find a batch-oriented approach more acceptable when dealing with a master file of pharmaceutical company customers—physicians and other health care providers.
- Vendor solutions will evolve to support specific domains, for example, delivering solutions such as Product Data Hub, Reference Data Hub, Account Data Hub, Privacy Data Hub, and others.
- Enterprises adopting an MDM-CDI strategy will focus on solving customer identity problems to achieve service-level improvements, to meet compliance requirements, and to enable or support initiatives such as national identifiers.
- The MDM-CDI vendor marketplace will continue to consolidate aggressively with large system vendors acquiring smaller MDM-CDI specialty vendors. Given the typical size and complexity of CDI initiatives, the willingness of companies to partner with a larger vendor is part and parcel of the implementation risk mitigation strategy.

- MDM-CDI Technical Capabilities Trends
  - MDM and CDI solutions and vendor products will continue to extend master data capabilities along at least two dimensions: (1) "organically" by evolving core functionality within the MDM-CDI engine, and (2) through integration with new complementary technologies such as advanced data quality and matching solutions, as well as new approaches to building function-rich, extensible applications (for example, using AJAX). Indeed, we believe that techniques such as AJAX would help MDM-CDI developers to rapidly build and deploy function-rich web-based applications that can access, search, and navigate master data managed inside MDM-CDI Data Hub platforms.
  - Support for institutional hierarchies in MDM and CDI solutions will rapidly mature from its current state to make sophisticated institutional hierarchy traversal one of the core MDM capabilities that could operate in a global enterprise. This will coincide with the development and adoption of relevant hierarchy identification standards.

- MDM and CDI implementations offer significant benefits to the organizations, but also represent certain risks. While enterprises are focused today on addressing the implementation and operational risk of deploying a CDI solution, they are beginning to recognize the risks associated with CDI's ability to integrate all data about customers or business entities in one place. This data must be protected not only from unauthorized, fraudulent use, but also from any attempt to access it that is against corporate business and security policy. The last point refers to what is known as data visibility. As the MDM-CDI market continues to mature, enterprises and vendors alike will be developing standards-based policy enforcement mechanisms that can protect data and preserve existing business processes, at the same time positioning the enterprise to be ready for verifiable, auditable compliance with government and industry regulations and laws concerning data security, visibility, confidentiality, and privacy protection.
- One of the key applications of a CDI solution will be a platform that would allow an enterprise to centrally manage privacy policies and thus to help enforce trusted relationships between the enterprise and its customers.
- MDM and CDI matching and linking technology will become much more sophisticated and powerful, and would support data matching for both structured and unstructured content.
- MDM and CDI ability to match and link data records from disparate sources based on certain criteria would create an opportunity to leverage robust search technologies to supplement or enhance traditional approaches to matching and linking, thus creating "virtualized" MDM-CDI platforms.
- Business demands and vendor consolidation will result in availability of integrated MDM and CDI solutions that would include sophisticated data quality components, flexible rules engines, metadata repositories, reporting and business intelligence tools, and even audit and compliance-monitoring capabilities in componentized service-based product suites.

## AJAX

*AJAX* stands for Asynchronous JavaScript and XML, and is a web development technique for creating interactive web applications that can significantly enhance user experiences on the web. For example, AJAX allows developers to create a single web page that supports rich user interfaces and dynamic content over standard protocols. Moreover, such a single web page application can process requests to the MDM-CDI data store and update data without the need to load a new page. This efficiency and seamless operation is one of the factors affecting user experience.

One of the advantages of AJAX is the way it accelerates web page loading by generating the HTML locally within the browser, thus loading a more compact payload that contains only JavaScript calls and the actual data. This feature is extremely useful for data access applications that can quickly load and browse a multipage large data set that could be a result of data retrieval from the Data Hub.

Of course, this is far from a complete list of MDM and CDI trends. There are others, some more tactical and some that may be viewed as too radical or strange. Let's consider the following example:

- Current thinking in the MDM and CDI world is to build these integration solutions as Data Hubs. But we know from networking technologies that there are better, more efficient topologies than hub and spokes. Would it be possible to build the next generation of MDM-CDI solution as a "switch" or as a "data grid"?

We may not be able to answer questions like this today, but we're confident that collectively we will be able to see the answer emerging from the mist of the not-so-distant future. And then we can even find an answer to the *big* question: What is the next "disruptive" thing after MDM-CDI?