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Developments in Practice XXX: Master Data Management: Salvation Or Snake Oil?

Heather A. Smith

Queen's School of Business, Queen's University, hsmith@business.queensu.ca

James D. McKeen

Queen's University

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Heather A. Smith

School of Business

Queen's University

hsmith@business.queensu.ca

James D. McKeen

School of Business

Queen's University

Abstract:

The newest hot topic in IT is Master Data Management (MDM). MDM is either "the most overused IT buzzword," the exact meaning of which vendors have yet to agree on, OR it describes a discipline and technologies for developing a consistent set of identifiers and attributes that describe the core data entities of an organization (e.g., customer, product) OR possibly, something in between. While the *definition* of MDM is vague, the *problem* it purports to solve certainly is not. Here, there is general agreement that the data in most organizations is a mess, resulting from years of developing in silos. Most organizations therefore face a multitude of inconsistencies in data definitions, data formats and data values which make it next to impossible for an organization to understand and use its key data.

This paper first outlines the business needs which MDM purports to address and defines what MDM is and is not. Next it looks at the "data ecosystem" and where MDM fits within it. Then, it outlines the value proposition for MDM and some of the challenges organizations face in making a business case for it. The last two sections look at some of the pre-requisites which must be put in place before embarking on an MDM program and describe "the data journey" of which MDM is only a part.

Keywords: master data management, information management, MDM, data quality, data management, data integration

I. INTRODUCTION

For at least three decades, IT planners have dreamed of creating an "intergalactic" data model that would provide their organizations with a set of fully integrated, high quality data with which to work. From data dictionaries in the 1970s to data warehouses in the 1980s to Enterprise Application Integration (EAI) in the 1990s, the goal is laudable but has been practically impossible to achieve. There are simply huge challenges to surmount: poor data quality; synchronization issues; the politics of data ownership; the difficulties of agreeing on a single definition of every data item; legal and regulatory considerations, which appear to change constantly; getting the business to recognize the value of the work involved; and those old standbys—security, privacy and lifecycle management.

The newest hot topic in IT is called Master Data Management (MDM), and it is rapidly climbing the upward slope of the Gartner Hype Cycle [Freidman et al. 2006]. MDM is defined by one group as:

> *A set of disciplines, applications and technologies for harmonizing and managing the system of record and system of entry for the data and metadata associated with the key business entities of the organization.* [Powell Media 2006]

MDM gets into the bits and bytes of data; it is not knowledge management and not information management, which are of considerably more interest to business. Yet, data management issues are the blocks with which effective information is built. We all know the old saying "garbage in; garbage out." So is MDM an idea whose time has come? Or will it flounder yet again because it is too big, too technical and too expensive to get under control? And where does MDM fit with other current IT "hot" issues such as service-oriented architecture, business intelligence, content management, and data quality?

To address these questions, the authors convened a focus group of senior IT managers from 15 different organizations in a variety of industries. To prepare for this meeting, participants were asked to research MDM and related issues in their own organizations and prepare a presentation outlining:

- How they define MDM and related concepts;
- What their organization is doing about MDM at present; and
- What resources, roles, and responsibilities and practices will be needed to achieve it, assuming that it is a desirable goal in the first place.

Participants also shared internal company documents on this topic with the researchers.

This paper first outlines the business needs which MDM purports to address and defines what MDM is and is not. Next it looks at the "data ecosystem" and where MDM fits within it. Then, it outlines the value proposition for MDM and some of the challenges organizations face in making a business case for it. The last two sections look at some of the prerequisites the focus group and others feel must be put in place *before* embarking on an MDM program and describe "the data journey" of which MDM is only a part.

II. WHAT IS MDM?

MDM is either "the most overused IT buzzword," the exact meaning of which vendors have yet to agree on, [Wailgum 2007] OR it describes a discipline and technologies for developing a "consistent set of identifiers and extended attributes that describe the core entities of an organization," that is, parties (e.g., customers, employees and so on.), places (e.g., locations, regions) or things (e.g., accounts, assets, products) [White et al. 2007] OR possibly, something in between. MDM has been variously described as:

- "A wrapper concept for information management used by vendors" (a focus group member)
- "A means of centralizing key corporate data in order to provide consistent customer and product data across the business" (another focus group participant)
- "Applications to create and maintain an integrated set of master data" [Powell Media 2006]
- "Technologies that provide master data integration services (e.g., EAI, Extract Transform Load, Enterprise Information Integration) and master data stores and metadata repositories" [Powell Media 2006]

- "*Not* a technology but a modeling, mapping and semantic reconciliation exercise that merges and resolves conflicting data sources and establishes a trusted, authoritative source of reference for commonly used information assets" [White et al. 2007]
- "A means of merging all disparate, conflicting records on customers or transactions into one authenticated master file" [Yang 2005]
- "A way to create a single unified view of the organization" [Fisher 2007]
- "Information management for core data" (a focus group manager)
- "A set of technologies to help enterprises better manage data flow, integrity and synchronization, plus a governance mechanism for enforcing data policies" [Wailgum 2007]

In short, as one focus group member noted, "MDM is a term that is overused and has multiple meanings. We must clarify what we mean by it." But, while the *definition* of MDM is vague, the *problem* it purports to solve certainly is not. Here, there is general agreement that the data in most organizations is a mess, resulting from years of managing from a system-centric perspective. "Most organizations have focused too narrowly on the systems side of the problem to the detriment of the data side" [Lee et al. 2006]. One set of researchers described the situation facing organizations today as follows:

> *The IT landscape is littered with legacy, packaged and developed applications, coupled with multiple data warehouses, and uncontrolled, unstructured data across the enterprise. This complex web makes managing information as a strategic asset very difficult.* [White and Genovese 2006]

As a result of several decades of developing data in silos, most organizations face a multitude of inconsistencies in data definitions, data formats, and data values, which make it next to impossible for an organization to understand and use its key data, such as information about its customers or products [Lee et al. 2006).

This problem has been exacerbated in recent years by a number of factors. First, technology's ability to store ever-increasing amounts of data has vastly outstripped the organization's ability to manage, analyze and apply it [Davenport 2007, p.154]. Second, by adding new "enterprise solutions" (e.g., ERP, CRM) to "manage data," organizations often unwittingly contribute to further data confusion. Many vendors have plugged some type of MDM into their technology to create a "true view" of the enterprise, but this typically just adds new layers of complexity to the situation [Fisher 2007]. Third, companies often try to solve the problem with Band-Aid

Factors increasing the Data Management Challenge
• **Increasing storage capabilities**
• **Layers of "enterprise" solutions**
• **Multiple groups managing data**
• **Ownership issues**
• **Short-term workarounds**

structural solutions, which are ineffective at best and counterproductive at worst. One firm had 14 different groups with some responsibility for generating master data [Flint 2004]. Fourth, there are ownership issues. As one focus group manager noted, "We've got tons of customer data spread around our organization but the core teams are not willing to either govern it themselves or to give up ownership, so therefore this data is not managed." Another commented, "Our biggest obstacle is getting the line departments to pay attention. They hope IT can just make it happen and resist taking responsibility for data ownership." Finally, organizations are feeling pressures from the need to manage data globally, their desire to do trend analysis, increasing regulation demanding reconciled information, and more and more cross-functional systems development. Unfortunately, under pressure the easiest solution is often to develop "work-arounds," i.e., short-term solutions for each particular need, which do nothing to solve the long-term problem and drain resources away from addressing it [Lee et al. 2006].

In short, organizations want high-quality data, but they lack a roadmap to get there [Lee et al. 2006]. MDM is being promoted as a means of developing such a roadmap—to focus companies on the job of creating a single view of their most important pieces of information in order to improve the accessibility of their most critical data (e.g., customers, products, employees). It is an *initiative* whose goal is to look at critical data in a cross-domain manner, achieve consistency, implement enterprise-wide governance processes, and remove data silos [Friedman et al. 2006]. Although technology may be needed to facilitate accessibility by unrelated applications, the focus group saw MDM as primarily a nontechnical data analysis and management activity focused on achieving consistency and quality so data can be used for multiple purposes. By emphasizing critical data, the hope is to make the task more manageable and ensure companies can at least understand who their customers, products, and suppliers are. Thus, while MDM concepts are not new, they are a new twist on an old problem [White et al. 2006].

From the previous discussion of what MDM is and is not, we can derive the following working definition:

> *Master data management (MDM) is an application-independent process which describes, owns and manages core business data entities. It ensures the consistency and accuracy of these data by providing a*

III. THE DATA ECOSYSTEM

The previous definition represents a more focused approach to information management than has been typically used in the past, and hopefully, a more practical one. Rather than an "intergalactic" data model, the goal is to get companies to focus on the core data that really matter to them. Nevertheless, all too often, MDM is confused with a number of other important data and information management activities in the enterprise. Figure 1 clarifies where MDM fits into a "data ecosystem," illustrating the other activities and technologies that are related to it. It is important to understand the relationships between the different entities in the ecosystem in order to recognize the work that must be done to make any MDM initiative successful and to integrate MDM into other concurrent information management activities within the organization.
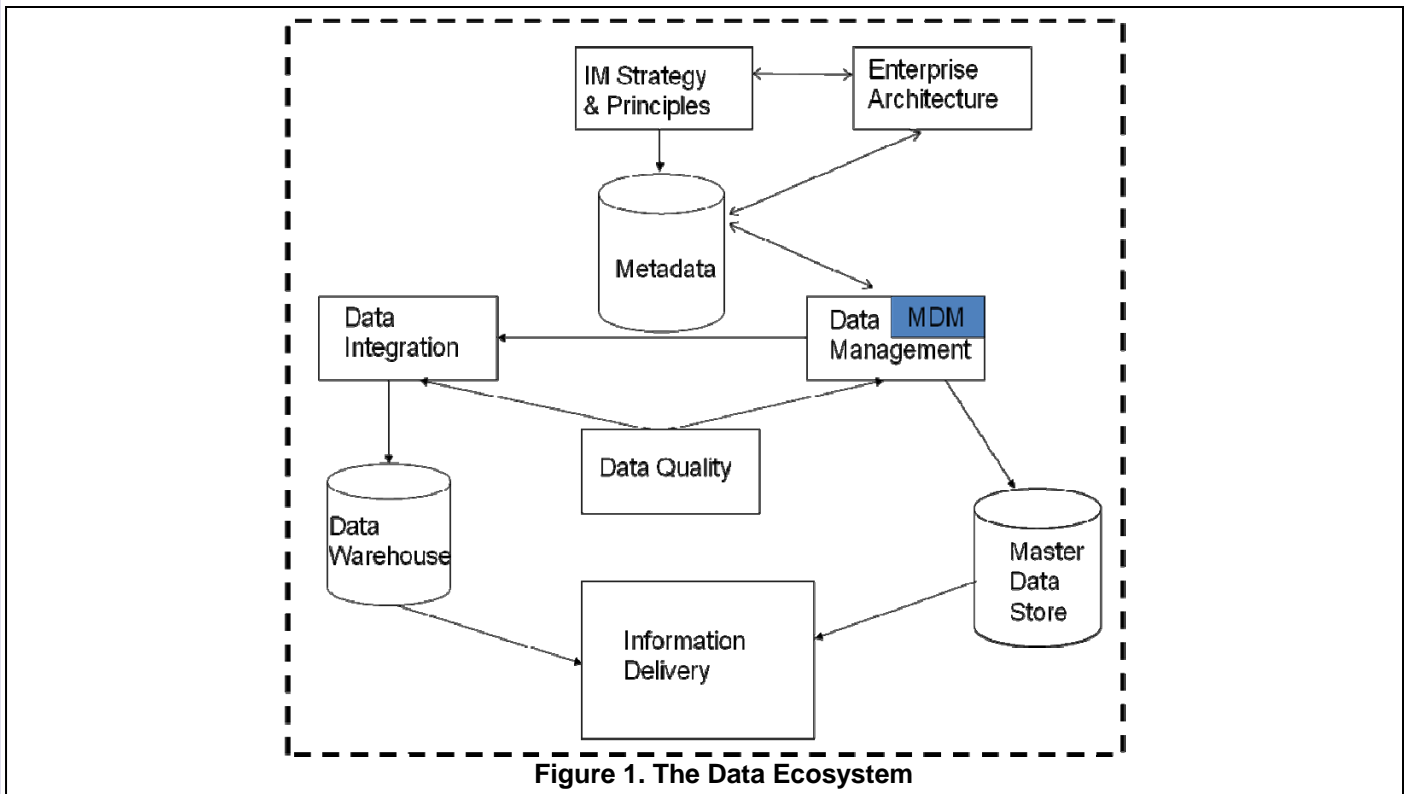

Figure 1. The Data Ecosystem

IM Strategy and Principles

As we have noted elsewhere, information management is "the means to get above the fray and clarify how the enterprise will manage information as an integrated resource" [Smith and McKeen 2007). Unlike MDM, information management covers *all* forms of information needed and produced by the business, both structured and unstructured, and it addresses the complete information lifecycle from acquisition or creation, through organization, navigation, access, security, administration, storage, and retention. Because IM is not yet a separate organizational entity, many organizations are finding it essential to develop an enterprise-wide framework that clarifies the policies, principles, roles, responsibilities, accountabilities, and practices for IM wherever it is done [Smith and McKeen 2007]. Sometimes called enterprise information management, this function establishes the strategy for structuring, securing and improving the accuracy, accessibility, and integrity of information assets [Friedman et al. 2006]. Clearly, this activity includes the core data addressed by MDM. However, while establishing essential and prerequisite guidelines for core data management, IM strategy and principles may be set at a higher level of the organization, on a broader scale and by a different group of people. As such, it provides the context in which MDM is accomplished, but it does not do the work of master data management.

The outcome of the process will be the beginning of a **metadata repository.** It stores information definitions, standards for information use and change, and cross-references for all models, processes and programs using a particular piece of information. The creation of a metadata repository for all data is a huge undertaking and while highly valuable in the long run, it may not receive the necessary support from the business [Smith and McKeen

2007]. Here again, MDM attempts to cut down the effort and increase the value of this work by focusing on core business data only.

Enterprise Architecture

Information management strategy and principles should be important contributors to an organization's enterprise architecture. While information and architecture should be as separate as possible, information needs and qualities will clearly affect the processes of an organization. And as the organizational needs for (and uses of) data change, these must be reflected in how data are managed and the information that is available about their uses (i.e., metadata). Again, establishing a dialogue and discipline for core corporate data first will have the highest value for the organization and biggest impact on process design [McKeen and Smith 2007].

Data Management

Data management is the process of applying information strategy and principles to individual data entities. It is the critical work of making decisions about data, often across organizational boundaries. It includes clarifying the roles and responsibilities for each piece of data and establishing proper protections and controls for change. Ideally, most organizations would like a "single version of the truth" for each data item. The reality is that the typical legacy environment in many firms today means that this is the long-term goal, and that, in the short term, there may be duplicate versions of the same or similar information used in different parts of the organization. These must be identified, managed, and synchronized where possible, and plans must be made to eliminate duplicates and variants over time [Smith and McKeen 2007].

Information stewards are responsible for data management. These business people determine the meaning of information entities (e.g., customer) in addition to their business rules and contextual use. They should be responsible for the accuracy, timeliness, lifecycle, and redundancy of the data about each entity. They also determine who may access it and provide guidance for the retention and deletion of information in accordance with regulatory and legal requirements. In addition, they make information about data available through the organization's metadata [Smith and McKeen 2007].

As a subset of the data management process, MDM focuses solely on a small number of core pieces of data, rather than all data. Participants stressed that it is the management of *core* data that is at the heart of MDM. "MDM represents the processes and technologies used to create a single view of data," said one. Another noted that MDM is not an IT solution but a process, and should not be seen as a quick fix like EAI. "Our vision is to create a single common data source that can be centrally managed to serve all business systems. To get there we need enterprise discipline." In short, "MDM is really only part of the overall data ecosystem," said a focus group manager. "All parts of it must connect together in order for MDM to be effective."

Data Quality

Clearly, if an organization is going to create a single source for each of its core data entities, their quality is going to be of the utmost importance. Data quality has become increasingly important in recent years as organizations try to integrate and reconcile data from different parts of the enterprise for use in data warehouse, business intelligence, customer management and compliance initiatives. "Our goal is clean, accurate data that will facilitate new business capabilities," said a focus group manager. "You can't do any type of integration or data management without it." Without data quality, it is impossible to build trust or confidence in the data, and without this, user acceptance of any initiatives based on such data will be limited and benefits will not be achieved [Friedman et al. 2006]. Improving data quality typically involves a number of exercises to reconcile differences in data definitions, data formats, data values, and data synchronization [Lee et al. 2006]. A data quality effort therefore aims to ensure data is correct, complete, current, and consistent, while data management ensures it is in context and access to it is controlled [Davenport 2007]. While it is possible to have data quality without data management, it is not possible to have data management without data quality. MDM efforts therefore focus the costs and challenges of data quality on the most valuable data in the organization.

Data Integration

Similarly, data integration can occur without data management, but it is clearly highly desirable that the data management effort precede integration projects. At present many organizations use technologies such as EAI [McKeen and Smith 2003] to "translate" data from one function to another in order to achieve integration. They add extra steps to processing but can be effective in achieving an organization's short-term integration goals. However, as demands for integration increase and as more and more functions and applications use and modify the same pieces of data, the costs and complexity of such solutions mount, and the risk of creating and using poor quality data on which to base business decisions increases. In the context of an MDM initiative, data integration serves two purposes, according to the focus group. First, it acts as an interim step towards achieving a single source of all key

data, enabling data to be combined and collected in a data warehouse, which can then be used for a variety of information delivery and data analysis activities. "While a centrally managed single source of data is desirable," said a focus group manager, "often hybrid models are more practical." Second, data integration is a necessary and practical step for those data which are not deemed to be core but which are created and updated by more than one application or business function.

The goal of data integration is to create a **data warehouse** which can be considered as a credible, trusted source of *integrated* information. "A data warehouse is not an authoritative source of data," explained one manager, "but it is moving in the right direction and can be used as a source for some types of work."

The goal of data management (or master data management) is to create *the only authoritative source of information.* Once MDM is in place, a **master data store** is created and all requests for these data are processed against it. Thus, while a data warehouse is an after-the-fact reconciliation of data from a variety of sources, a master data store is the source of information. While both can be used for **information delivery,** the focus group stressed that decoupling data from applications through data management is the ideal. The costs and challenges of doing this explain why most companies have not made more progress doing it .

IV. THE MDM VALUE PROPOSITON

MDM is *not* an easy sell in organizations. "Eyes glaze over when you talk about it," said a focus group manager. "We don't even use the term. Instead we talk about core data and the business capabilities that will result." Others agreed. "MDM is hard to sell on its own." "The vendors say 'buy an MDM,' but it's not a technology; we need to put things in business terms." However, whatever it is called, there are clearly benefits to controlling the data mess that is present in most companies today. "If we can demonstrate these benefits," said a participant, "the business will sell itself on MDM."

But this has been tough to do in most organizations. "The business case for MDM is *never* compelling enough," complained one focus group manager. Part of the reason *may* be the amount of effort required in order to get the benefits. While less complex and political initiatives, such as data cleansing and quality, can demonstrate payback within two years, the lead time for making a difference with MDM is seen as 5-10 years—much too long a time horizon for most executives [Friedman et al. 2006].

There are certainly obvious benefits to having a single source of a company's data:

- **Better information.** Having "one version of the truth" and the ability to simply provide consolidated views of key corporate information is the holy grail of MDM [White and Genovese 2006]. It addresses a central question of executives, shareholders, and regulators that has regularly embarrassed IT: "What kind of company doesn't understand who its customers, products, and suppliers are?" [Fisher 2007]. Having consistent information is seen as being important for improving compliance reporting, generating operational efficiencies and achieving competitive differentiation. It also eliminates disagreements within the business about whose data is right [White et al. 2006; Delbaere and Ferreira 2007]. A focus group manager noted, "Creating our common financial data took two and a half years and only happened because it was pushed through by the CFO, but now that we're down this road we can all see that there are tons of benefits." Among the focus group, regulatory compliance was seen as a big driver of MDM. "We're under incredible pressure to rationalize our data because of regulatory complexity. This is extremely hard to do without centralized data."

- **Cost savings.** While there are a variety of cost savings attributable to MDM, most of the pain of poor data appears to be spread out across the organization, making the savings disparate and incremental, rather than large and obvious. There are two main types of business cost that can be avoided by improved data management [Lee et al. 2006]. First, there are the costs caused by poor data quality e.g., the need to verify data or poor decisions. Second, there are costs caused by improving or assuring data quality, such as the effort to prevent, detect, or repair poor data. However, the focus group suggested that the cost savings argument was really a "red herring" and that the true value of MDM lay in improved business capabilities. What MDM *does* enable but does not create on its own is process simplification and the minimization of "handoffs" [White and Genovese 2006; Friedman 2006]. Operational efficiencies are another indirect saving stemming from MDM since these are usually based on the availability of information [White et al. 2006]. Thus, while cost savings will likely result from an MDM effort, they will not be large enough or clear enough to build a business case around.

- **Improved business capabilities.** Organizations are beginning to recognize that how they manage their key data is critical to their ability to improve agility and performance [Friedman 2006]. Lack of trusted, quality information is widely seen as a strategic barrier inhibiting such capabilities as agility and competitive differentiation [White et al. 2006]. Focus group members pointed out that data consistency is essential when

dealing with partners and suppliers, particularly for global companies. "We want to move towards MDM because it will support flexibility," said one manager. "It facilitates globalization, acquisitions, and divestitures, company reorganizations and product rebranding." Another noted how much easier it is to provide multi-language support in an MDM environment with a single source of key corporate data. Participants also believed that it enables faster business transformation. "We can't predict the future but we know it's going to change. Therefore, we have to make it easy to change," stated a participant. Finally, MDM makes it easier for companies to improve the customer experience. "Because there is only one source of data, we can develop stronger access controls, which ensure customer privacy. And because the data are more accurate, customers will be less frustrated when dealing with the company," explained another manager.

- **Improved technical capabilities.** There are also many benefits for IT in simplifying and streamlining data management and access. Eliminating data redundancy promotes the reuse and leveraging of corporate data and reduces the amount of work involved in providing business information [White and Genovese 2006; Friedman 2006]. Locating key data in a single master data store helps avoid "spaghetti interfaces" and facilitates integration [White et al. 2006]. MDM is also a prerequisite for the introduction of a services oriented architecture (SOA) [Radcliffe et al. 2006]. "The core capabilities of MDM are also significant advantages for SOA," said one manager. "The easiest services to provide are those which already have centralized data. For example, if you have to provide five different views of the customer, you could build five services but this would destroy the value of SOA." Another added, "You can make a mess of SOA if you don't treat data properly." Other participants believe that MDM will help reduce IT costs through eliminating the need for unique applications and code and enabling a variety of sourcing options. "Once we have a single point of data, it doesn't matter where it is located; we can move data bases around without the users even knowing," said one manager. They also suggested that there would be reduced IT work involved in preparing complex, and often conflicting, reports for auditors and regulatory bodies. In short, from the IT managers' point of view, MDM is an effort that will proactively address data quality and consistency and simplify integration and application development.

V. PREREQUISITES FOR MDM SUCCESS

While there is broad agreement that the *concept* of MDM is an idea whose time has come, the fact remains that implementing it is "a brutal combination of bridging technological silos and brokering accords between corporate turfs" and has "daunting cultural, business process and technology components" [Wailgum 2007]. Since the root of all data problems is in the processes and practices which create them, no software is going to magically solve data problems on its own [Fisher 2007]. In fact, according to the focus group, technology often masks a myriad of problems, by "papering over" significant issues. "We can provide the technologies but unless the business has processes and workflow that will work with them, data management won't work," said one manager. "The real problem is the need to address the root cause of the data mess, that is, the functionality that creates it in the first place," said another.

Therefore, a successful MDM initiative must go back to the source—the core business processes and systems that create and update key company data. The focus group stressed that before any type of master data management can succeed, there are four prerequisites that must be collaboratively addressed by the business and IT:

1. **Develop an Enterprise Information Policy.** Because MDM will at some point become a highly political exercise, taking the time to articulate what the company policy is on core data and the key principles surrounding its management is essential [Wailgum 2006; Friedman 2006]. Such a policy must delineate a number of principles around such issues as corporate data management objectives; data ownership and accountability; privacy, security, and risk management; the value of enterprise data; regulatory compliance; accommodating conflicting priorities; and policy effectiveness [Smith and McKeen 2005]. As noted earlier, without such a context as a guideline, it is likely that the obstacles involved in any specific MDM project will prove to be insurmountable.

2. **Business Ownership.** While MDM is a collaborative effort and IT can provide considerable analytical skills for the work involved, determining *what* core data a company wants and what it will look like is fundamentally a business problem [Flint 2004]. The focus group outlined several business roles and responsibilities that need to be undertaken in MDM work: executive sponsorship; business sponsorship; stakeholder involvement; data stewards (who work directly with the data definitions); and change management specialists. They stressed that all stakeholders must be involved in MDM or political problems will likely ensue. A key challenge is identifying a primary business owner for each piece of data. At the master entity level, it is likely that co-ownership or enterprise ownership will be needed with specific attributes owned by individual business units. Some firms have also established corporate data groups to "speak for the enterprise" and to predefine standards around data that "we eventually want to be in the core but are not yet built." Without a single business voice, extensive data governance is necessary to address the conflicting opinions that inevitably arise. One focus group manager

noted: "We have 1,400 data managers and they are each resistant to change; when you add in our suppliers' data we can't get anything done."

3. **Governance.** It is a challenge to get all stakeholders to agree on common definitions for the key data items they use daily [Wailgum 2006]. Therefore, mechanisms must be created to resolve conflicts and make critical decisions at all levels. Changing core data often means changing business processes. Thus, MDM is ultimately a political and consensus-building effort [Fisher 2007]. Nevertheless, because there are considerable technical impacts to data decisions, IT must be involved. Thus, a cross-functional and collaborative IT and business data governance process should be established [Delbaere and Ferreira 2007; Davenport 2007]. Focus group members agreed wholeheartedly. "MDM can't be sustained without governance," said one. "We use a data roundtable to make decisions about data and understand their implications." However, they cautioned that the hard work of data management cannot be offloaded to the governance group. "We still have a problem getting the business involved in this work," said one. "You almost need a catastrophe to get their attention." Research has found that companies need "extraordinary attention" to data management processes and governance in order for MDM to be successful [Davenport 2007]. At Capital One, Davenport (2007) found that 25 percent of IT staff worked on data issues. This figure underscores the complexity and challenges involved in doing data management well and the effort involved can be a major obstacle for both business and IT. Thus, there is still a temptation to "code around" data problems, said the focus group.

4. **The Role of IT.** Although data management is first and foremost a *non*technical problem, technology and IT staff themselves have several important roles to play in MDM. First, IT analysts have the skills to develop a data strategy, model the data, and undertake the work involved in defining its parameters and context [Fisher 2007]. Second, effective technology is essential for maintaining data models and metadata repositories [Delbaere and Ferreira 2007]. Third, IT staff will be needed to identify which applications use which data and where it comes from, tracking its flow from application to application. "Often the business doesn't know its data and IT staff have to figure out how everything fits together," said one manager. Fourth, as the MDM initiative proceeds, IT will have to manage the synchronization of data and data cleansing projects as well as developing short-term tactical or hybrid solutions which help move the company toward its ultimate goal of a single source of master data. "Most organizations already have some form of master data in their legacy applications," explained a manager. "Therefore, any new MDM environment will have to coexist and synchronize with legacy components because you simply can't up and replace them overnight." While these are important responsibilities, the focus group stressed again that MDM work cannot be delegated to IT alone, or it will fail.

VI. THE DATA JOURNEY

When asked whether MDM was "salvation or snake oil," most of the focus group felt the question was moot as the realities of today's organizations make MDM almost impossible to deliver. MDM is certainly not a single project they stressed, but it is instead a journey *toward* a single source of high quality data. "MDM is a continuous effort," said one manager. "It's going to go through several cycles before we get it right." "MDM is a multi-year strategic initiative said another." "There are different stages of capability to go through," said a third. A participant outlined the stages he sees in his organization:

- **Stage 1.** "I admit I've got data, so I'll inventory it."
- **Stage 2.** "Let's identify what data is used by which applications and processes. I'll discuss the role of information and ownership."
- **Stage 3.** "Let's limit how much data we move around and maybe design some information exchange requirements."

While there are clearly more stages involved, the organization had only journeyed this far.

Best practice with MDM, it is generally agreed, is to start small and evolve towards a more holistic data strategy and roadmap [White et al. 2007]. "This helps the organization understand where MDM fits into its current business strategies and priorities," said a manager. And repeated communication is essential. Many data management initiatives fail because of a lack of understanding of what can be expected on the journey, resulting in discouragement and lack of perseverance [Lee et al. 2006]. In fact, executives are often unaware of the data problems that exist and/or believe that IT can handle them without additional time and resources. "Data problems tend to be masked by layers of subordinates. The CEO receives the data [he requested] and remains unaware of the cost of producing it." [Lee et al. 2007]. Thus, it is extremely important to ensure that the challenges of effectively managing data are repeatedly presented to senior executives and supported by analysis.

The focus group discredited the current "solutions" offered by the vendor community for MDM. "Their different perspectives about MDM are conflicting and exasperating," said one manager. "Every vendor has their own

approach and they don't mesh," stated another. However, they grudgingly admitted that vendors can sometimes get funding for an MDM initiative when IT cannot. "They're successful because they speak only about the business benefits," said a focus group participant. "They present MDM as a 'silver bullet' while all IT talks about are the difficulties involved." Technology is *not* the place to start the MDM journey, they all agreed. "Sometimes manual processes can be simpler and cheaper than an IT solution in the beginning," one pointed out.

One vendor solution which some participants did find helpful was using an industry-based data model to kick start their internal modeling initiative. "The problem we're having is limiting our scope," admitted one manager. "Every piece we set out to deal with leads to other problems. You need to have a holistic solution but it's important not to 'boil the ocean.'" Having a roadmap is therefore helpful, even if it changes over time [White et al. 2007]. "If you know where you're going, you can watch for 'data pain points,'" said a participant "and use these for opportunities to justify some data work."

One manager recommended doing information maturity assessments as a starting point. "We're still very application-centric and we need to become more information focused." In most organizations, information is still considered a byproduct of applications and processes, not as an asset in its own right. A focus group manager summed up IT's dilemma stating, "We must raise the bar gradually on how we manage information; otherwise we will simply implode with the weight of so many layers of data and limited time and resources."

VII. CONCLUSION

MDM is not a new idea. It is a wrapper for concepts and issues that have been plaguing IT for several decades. To this extent it is snake oil, because there is no silver bullet when it comes to getting one's data house in order. Right now, it appears that many vendors are jumping on the MDM bandwagon, and they are creating a lot of confusion as a result. Both the focus group and researchers agree that while MDM makes sense in theory, it is a discipline that many organizations may not be ready to adopt. Thus, before leaping blithely into an MDM initiative, it is wise to do your homework: identify some small, quick wins; focus your effort on one type of data; learn with the business how to manage the process; and develop and continually revisit an information roadmap and strategy. For companies willing to put in the effort, there is evidence that MDM delivers significant benefits, but each company will have to decide whether they're willing to pay the price to clean up their data detritus or wait until the next "big idea" comes along, complete with salesmen, and hope that it will be their salvation.

REFERENCES

Davenport, T. (2007). *Competing on Analytics: The New Science of Winning,* Boston, Mass., Harvard Business School Press.

Delbaere, M. and R. Ferreira. (2007). "Addressing the Data Aspects of Compliance with Industry Models," *IBM Systems Journal,* (46) 2, pp. 319-335.

Fisher, T. (2007). "Demystifying Master Data Management," *CIO Magazine*, April 30.

Flint, D. (2004). "How Nestle Reduced Errors in its Management of Master Data," GartnerGroup Research, November 16, ID# G00123052.

Freidman, T. (2006). "Key Issues for Data Management and Integration, 2006," GartnerGroup Research, March 30, ID# G00138812.

Freidman, T. et al. (2006). "Hype Cycle for Data Management, 2006," GartnerGroup Research, July 6, ID# G00140057.

Lee, Y., L. Pipino, J. Funk, and R. Wang. (2006). *Journey to Data Quality,* Cambridge, Mass, The MIT Press.

McKeen, J. D. and H. A. Smith. (2003). *Making IT Happen: Critical Issues In Managing Information Technology*, New York: John Wiley & Sons.

McKeen, J.D. and H.A. Smith. (2008). "The Emerging Role of the Enterprise Business Architect," Communications of the Association of Information Systems, (22), Article 14, February, pp. 261-274.

Powell Media. (2006). "Master Data Management: Creating a Single View of the Business," Business Intelligence Research.

Radcliffe, J., A. White, and D. Newman. (2006). "How to Choose the Right Architectural Style for Master Data Management," GartnerGroup Research, September 28, ID# G00142610.

Smith, H. A. and J. D. McKeen. (2005). "Developments in Practice XV: "Information Delivery: IT's Evolving Role," *Communications of the Association of Information Systems* (15) Article 1, February, p. 197-209.

Smith, H. A. and J. D. McKeen. (2007). "Information Management: The Nexus of Business and IT," *Communications of the Association of Information Systems* (19) Article 3, January, pp. 34-46.

Wailgum, T. (2007). "Master Data Management: Truth Behind the Hype," *CIO Magazine*, May 18.

White, A., D. Newman, D. Logan, and J. Radcliffe. (2006). "Mastering Data Management," GartnerGroup Research, January 25, ID# G00136958.

White, A. and Y. Genovese. (2006). "Your Business Process Platform Needs and Enterprise Information Strategy," GartnerGroup Research, April 26, ID# G00139332.

White, A., J. Radcliffe, and D. Newman. (2007). "The Important Characteristics of MDM Implementation Style," GartnerGroup Research, May 11, ID# G00146840.

Yang, S. (2005). "Master Data Management," *Baseline,* New York (1) No. 45, June, p. Z.000.

ABOUT THE AUTHORS

Heather A. Smith (hsmith@business.queensu.ca) has been named North America's most published researcher on IT and knowledge management issues. A senior research associate with Queen's University School of Business at Kingston, Canada, she is the co-author of four books: *IT Strategy in Action; Management Challenges in IS: Successful Strategies and Appropriate Action; Making IT Happen: Critical Issues in IT Management;* and *Information Technology and Organizational Transformation: Solving the Management Puzzle.* A former senior IT manager, she is currently co-director of the IT Management Forum and the CIO Brief, which facilitate interorganizational learning among senior IT executives. She is also a senior research associate with the Society for Information Management's Advanced Practices Council In addition, she consults, presents, and collaborates with organizations worldwide, including British Petroleum, TD Bank, Canada Post, Ecole des Hautes Etudes Commerciales, the OPP, and Boston University. Her research is published in a variety of journals and books *including MIT Sloan Management Review, Communications of the Association of Information Systems, Knowledge Management Research and Practice, Journal of Information Systems and Technology, Journal of Information Technology Management, Information and Management, Database, CIO Canada,* and the *CIO Governments Review.* She is also a member of the editorial board of MISQ-E.

James D. McKeen is a professor of IT Strategy and Distinguished Research Fellow in MIS at the School of Business, Queen's University at Kingston, Canada. Jim received his Ph.D. in Business Administration from the University of Minnesota. He has been working in the IT field for many years as a practitioner, researcher, and consultant and is a frequent speaker at business and academic conferences. Dr. McKeen co-facilitates the networking of senior executives in the IT sector through two well-known industry forums: the IT Management Forum and the CIO Brief. He also has extensive international experience, having taught at universities in the U.K., France, Germany, and the U.S. His research has been widely published in various journals including the *MIS Quarterly*, *Knowledge Management Research and Practice*, the *Journal of Information Technology Management*, the *Communications of the Association of Information Systems*, *MIS Quarterly Executive*, the *Journal of Systems and Software*, *the International Journal of Management Reviews, Information and Management*, *Communications of the ACM*, *Computers and Education*, *OMEGA*, *Canadian Journal of Administrative Sciences, Journal of MIS*, *KM Review*, *Journal of Information Science and Technology* and *Database*. Jim is a co-author of three books on IT management with Heather Smith, the most recent being *IT Strategy in Action* (Pearson Prentice Hall, 2008). He currently serves on a number of editorial boards.