

White Paper



Master Data Management

Whatever your reasons for wanting to implement MDM, the sorts of facilities described for next generation MDM will be required

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Introduction

Master data management (MDM) has been around for something like 15 years, depending on how you define a rather fluid and dynamic sector of the market. There have been endless papers, reports and articles written on the subject (some of them by Bloor Research) to the extent that we do not wish to repeat what is already widely available elsewhere.

Without going into specific definitions MDM is about consistency: it is about ensuring that everybody in your organisation and every application that you use sees and uses the same information about the same things; that there is no discrepancy, for example, between the details your CRM system has on customer A and the details that your ERP system has about the same customer, and that this applies across every application throughout your enterprise. In addition, MDM is about the consistency of reference data as well, where reference data refers to such things as the corporate definition(s) of “profit” or “client”. For example, sales departments typically consider a customer to be someone who bought a product while support considers a customer to be someone who uses it.

However, consistency on its own is not enough: if data is consistently incorrect then it will not improve either decision making or operational processes. For this reason, MDM is invariably implemented in conjunction with data quality. In addition, the data needs to be secured and it needs to be maintained in an accurate, complete and consistent fashion on an on-going basis, which means that data governance, which ensures these characteristics, is also closely associated with MDM. In this context it is worth noting that regulations such as Dodd-Frank, Solvency II and others mandate that, in the case of the latter, data is “accurate, complete and appropriate”. This is virtually impossible to achieve without this combination of MDM, data quality and data governance.

Of course, businesses do not invest in MDM because it offers consistent data or data quality because it offers accurate data. No, they invest in these things because they offer a business benefit such as a better understanding of customers, which will, in turn, offer better customer retention, increased up-sell and cross-sell and so on. The bottom line is that it will be these business benefits that will be the catalyst behind any investment in MDM and, as a result, we will spend a significant part of this paper in reviewing potential use cases for MDM and where these may be of benefit.

Before we do any of that however it is worth asking which companies might invest in MDM technology? According to research conducted by TDWI (published 2012—see next section), over 60% of organisations already have MDM implemented and almost 30% plan to implement it. Moreover, of those that already have an implementation fully half expect to replace their existing solution within the next few years—most often because they had hand-built their own solution—so that they can expand and evolve their MDM operations. This raises the question of what sorts of features of an MDM solution these companies planning to replace their existing solutions are looking for? It also implies a similar question for MDM ‘virgins’: will they be content to implement the same sort of solution that their counterparts did in the past or will they leapfrog that stage to match those organisations looking at replacement solutions? Given that one of the top five reasons given for the failure of MDM projects is trying to do too much too soon we would recommend that the answer is both yes and no: yes, plan for what TDWI calls “next generation MDM” but don’t necessarily implement it all right now. We will discuss these next generation features towards the end of this paper and we will conclude with a short consideration of SAS’ MDM, which is a solution in this space, considering how it meets next generation requirements and lives up to the use cases discussed.

What is MDM?

In its report, Next Generation Master Data Management, published in 2012, TDWI defines Master Data Management (MDM) as “the practice of defining and maintaining consistent definitions of business entities (e.g. customer or product) and data about them across multiple IT systems and possibly beyond the enterprise to partnering businesses. MDM gets its name from the master and/or reference data through which consensus-driven entity definitions are usually expressed. An MDM solution provides shared and governed access to the uniquely identified entities of master data assets, so those enterprise assets can be applied broadly and consistently across an organization.”

What does this mean in practical terms? Let us break this definition down into some of its component parts:

- “Defining and maintaining consistent definitions” – in other words, you need to be sure that when you say “customer” or “profit” that your interlocutor means the same thing that you do. This sort of information is what is generally referred to as reference data. Many organisations have different meanings for, say, “profit” depending on context, and MDM for reference data, along with a business glossary, ensures that these definitions are consistent and easily identifiable.
- “Business entities” – we are not talking about IT constructs but about the things that you deal with every day within your business operations; entities such as customers (or clients or patients), products (or policies or mortgages or treatments), suppliers, partners, personnel, locations and so on. In other words, MDM is very much about resolving business issues not IT issues, though it may do that as well. For this reason business support is essential for successful MDM initiatives. The number one reason for failed MDM projects is “lack of executive support”.
- “Data about them” – defining and maintaining consistency for data about business entities is at the heart of MDM: it is designed to ensure that you have one perspective on your customers not multiple divergent views.
- “Across multiple IT systems” – it is often the case that information exists within multiple silos across the breadth of the organisation, either because the data is used in different applications or different geographies or for a variety of other reasons. MDM aims to provide consistency of the data across these silos. In these days of social media this also means incorporating information that may reside in environments such as in a NoSQL—for example, Hadoop—database. Note that this implies making use of what is often called unstructured data: things such as text.
- “Beyond the enterprise” – for enterprises that make extensive use of partners as, for example, resellers, it may be important to be able to ensure consistency of both reference and master data between the organisations.
- “Consensus-driven” – MDM is not about imposing anything but about collaboration across the business as well as between the business and IT.
- “Governed” – consistency of data is not enough: the fact that the same details are referenced everywhere is one thing but those details also need to be accurate, complete and secured to an appropriate level. Three of the top five reasons behind failed MDM projects related to inadequate data governance. In practice, governance means ensuring that the data is of a suitably high quality, which will require the use of data quality tools to be used in conjunction with any MDM product, both for the sake of accuracy and to enrich the data with any elements that are missing. Further, data privacy requirements, in particular, must be observed in order to comply with relevant regulations.

Perhaps the main point to be taken out of this discussion is that MDM is, and has to be, business-driven so let us consider, in the next section, some reasons why the business might be interested in MDM.

Use cases

There are lots of potential use cases across lots of industries and the following is only a sampling to give you an idea of what is possible. To simplify matters further we are going to take a customer-centric perspective, though this does not mean that there are not excellent examples of product, personnel or supplier-led MDM implementations. In the use cases that follow we will move from the specific to the general.

Insurance

Insurance companies have historically been policy-driven. That is to say, life insurance, health insurance, motor insurance, house insurance and all other sorts of insurance have typically had their own applications, their own databases, their own staff and, in effect, been sub-entities within the organisation. That creates a number of problems. In particular, it is contradictory to a customer-centric perspective. If you accept the principle that knowing your customer will help you to retain them and cross-sell to them more easily and more effectively then a policy-driven environment is the antithesis of this. You can't build customer loyalty programmes, for instance, if you don't have a customer-centric approach that will, in turn, support improved customer segmentation and marketing. Implementing MDM in this sort of environment does not remove the individual nature of the different classes of insurance or the departments that run these operations but what it does do is to integrate the customer-related details across these various environments.

A secondary consideration applies simply to the fact that the data is siloed, regardless of whether it is policy-centric or customer-centric: if you don't know which customers have which policies with you, then you can't tell how much exposure you have to a particular client or to a particular event. To take the second case as an example, what if Mount Vesuvius was to erupt (it last erupted in 1944 and typically erupts once every century)? How many cars, houses, people and businesses do you have insured that might be at risk and what is your exposure? This raises a further point

with respect to MDM, which is that it is useless to have a complete view of your clients if at the same time you do not know what products (in this case policies) they purchase or use. Thus any MDM solution needs to have multi-domain capability to support both customers and products (and, potentially, other things: for example, in healthcare insurance you might want comparable capabilities around providers).

Finally, it is worth noting that financial services companies outside insurance often have a similar issue with moving from an account-centric to a customer-centric approach but the two scenarios are similar enough that the details do not need repeating.

Healthcare providers

Hospitals, hospital trusts and other healthcare providers are in a very different position from insurance in the sense that while insurance companies may be transitioning from a policy-centric to a client-centric approach, most healthcare providers typically have no such stance at all at present and, in fact, have a very fragmented approach. There is, however, a need to move towards a more patient-centric approach. This is obvious from the point of view of treatment: you need to have all of the patient's clinical history and you may also need to understand their relationships to other patients in the case of, say, inherited diseases. There are, of course, different additional requirements in different countries. In the United States, for example, you will also need details with respect to the insurance plan or policy under which healthcare is provided and may also require information with respect to particular hospitals at which they may be treated and their location and, again, details of relevant pharmaceutical products that they may be prescribed. While you might start by ensuring the consistency and accuracy of patient records you should plan to take a similar approach to these other elements of the equation in due course. With as many as four of these (patient, treatment, insurance and location) this is typically a more complex situation than in financial services.

Use cases

Telecommunications (and other) call centres

The key metric in call centres is trying to meet is what is known as 'first time call resolution'. That is, that a caller only has to call once to resolve his or her issue and that they only have to speak to a single call centre operative. When a call is not resolved by the first representative it has a number of significant impacts:

1. In most cases it has a very big negative impact on the customer's perception of the organisation;
2. It significantly increases the cost of handling the call;
3. When the call concerns any aspect of system failure it means that income generation is impaired.

What customer service representatives need is full access to all relevant details about each customer that calls in—history of calls to the call centre, services used, experience of dropped calls, and so on—as well as relevant details to quickly and easily find the resolution of the customer's issue. Again, note that customers need to be related to call plans (products) so a multi-domain MDM solution is likely to be needed.

Further, details of calls, and their results, need to be fed into customer insight applications (see next section) as the time taken on calls, how many representatives were spoken to and how quickly resolution was achieved may be critical metrics in retaining and/or growing that customer.

Customer insight

Customer insight relates to the acquisition of new customers, the retention of existing ones and the ability to market additional services to existing customers. As such it is relevant to some degree across all sectors but it is particularly applicable in telecommunications, insurance, banking and other financial services, utilities (assuming there are multiple potential providers), and anywhere where competition is fierce and the cost of churn is

significant. However, it is not just customers that you need but profitable customers. To determine profitability you need to know the cost of the service or product, the mix of services they have used and what they have paid for them, the cost of serving them (that is, taking calls they may have made to a service centre as a cost), and the length of their tenure. From these and other metrics you can derive customer profitability both currently and over their lifetime as a customer of your company. Further, once you know what profitable customers look like—what their common characteristics are (and they may be multiple sets of these, known as segments)—then you will also know what sort of new customers you would like to attract and how to target your marketing. You will also know who you should focus on retaining as customers and who you are less eager to retain. A key focus of analytics is therefore to build models that enable these assessments. Specifically, these will cover:

- The likelihood that a customer will churn; that is, leave for a competitor. There are known triggers for this sort of event such as, in the Telco sector as an example, handset renewals, the introduction of a new iPhone or similar, bill shock from invoices that are far higher than the average, and dropped call rates being too high. Over time it is possible to see who is loyal and who is not, and you can estimate why. Conversely, you can identify who is fickle and is likely to be attracted elsewhere and by what.
- The profitability of the goods and services being consumed, because not all services contribute equally to profitability.
- Not just current customer profitability, but also the potential that exists for future profitability. Thus a customer who has in the past only shown marginal profitability but has now adopted (or you think might be interested in adopting) an additional service may become much more profitable in the future. This is also likely to affect loyalty in the sense that the more services that a customer takes the more loyal he or she is likely to be.

Use cases

- The segmentation of customers, which allow mass markets to be broken up into smaller groups of like-minded individuals (for example, teenage girls) who can have messages tailored to meet their needs and their perspectives of how they perceive themselves and their use of your technology. This is particularly important in ensuring targeted mobile advertising, which is arguably a whole other discussion point in its own right, though not one we shall pursue further.
- Preferred channels of communication. Whilst younger people may be very happy to use social networking there are groups where that is not an acceptable channel and would be viewed as highly undesirable as a means of dealing with anything thought to be remotely sensitive.

The key point is that these analytics cannot be relied upon unless you have accurate and consistent information about your customers, which MDM can provide. Historically, this has been described as having a 360° view of the customer: knowing as much as it is possible to know about them. With the advent of big data and social media, this has extended beyond traditional sources of data and must encompass new sources such as Twitter and Facebook. There is so much of this additional information that some commentators have suggested calling this a 720° view of the customer! Be that as it may, another requirement for MDM will often be that it can incorporate unstructured data from these sorts of sources.

SAS MDM

We do not intend to provide a full description of SAS MDM or go into detail about its capabilities and features. However, what we can say is that it is a multi-domain MDM solution built on a single platform. This is important: a number of SAS' competitors have acquired multiple MDM companies with multiple MDM solutions that do not work together seamlessly. Perhaps equally important the platform includes not just MDM capabilities per se but data quality, data profiling, data integration and data governance capabilities that are all integrated with one another. As we noted previously, one of the big dangers for MDM implementations is that you can try to do too much too quickly: that advantage of an integrated approach with all the relevant tools in one place is that you can implement and progress MDM at your own pace.

For MDM 'virgins' this is possibly as much as we need to say but for those who are looking at replacing existing systems then it is worth briefly describing the requirements for next generation MDM, as defined by TDWI. The top 10 requirements are as follows:

1. Multi-domain support – SAS supports the creation of master domains for elements such as parties (citizens, customers, students, patients and so on), organisations, sites, suppliers, products, assets, contracts and so forth.
2. Multi-department, multi-application MDM (sharing between business units) – what you need for this is to support a process-oriented approach (which SAS provides) that allows relevant functions to be used throughout the organisation and across departments.
3. Bi-directional MDM (feeding data back to sources and applications in addition to acting as a central hub) – master data created using SAS MDM is used to feed information back to originating business applications.
4. Real-time MDM (in addition to batch capabilities) – with MDM you can start with a batch-based operation (if you wish) and grow to real-time application integration through SOA.
5. Consolidating multiple MDM solutions (can simplify existing multiple domain siloed MDM solutions) - SAS MDM is equipped with built-in data connectors so that it can be integrated with other applications and solutions.
6. Coordination with other disciplines (such as data governance or stewardship) – SAS MDM includes a browser-based data governance and data stewardship console. SAS also provides data quality solutions that are integrated with MDM.
7. Richer modelling (hierarchical and multi-dimensional) – SAS MDM provides a web-based interface that can be used across departments and lines of business to store and manage different types of hierarchies and to maintain reference data entities consistently across the organisation, with definitions and relationships clearly defined for each entity.
8. Beyond enterprise data (for example, supporting social media or partner data) – the SAS solution provides access to unstructured or semi-structured data through connectors and can process them using document extraction (text mining) techniques. SAS offers B2B capabilities that can be used to integrate with partner data.
9. Workflow and process management (approval processes for new or improved data) - workflow design and management, case management, and workflow step visualisation are all provided. By augmenting SAS Workflow from within the MDM user interface, data stewards can resolve issues flagged during processing without having to access operational systems directly.
10. Solutions on top of tools and platforms (to support legacy hand-coded systems). One would not necessarily expect to have specific capabilities in this area but SAS has substantial experience of connecting and working with a variety of legacy systems.

SAS MDM

Feu Vert is a SAS MDM customer. It is a leading European provider of car accessories and services and uses the SAS MDM Solution to improve the accuracy of its marketing data to support better customer knowledge and operational efficiency. SAS MDM is managing more than 50 million records across seven different entity types and feeds master data back to operational applications so they can take advantage of master data maintained in SAS MDM. On-going transaction levels are approximately 50K updates a day. According to the company, with MDM Feu Vert “has been able to create a unique and consistent reference data hub of customer data, implement a strong customer data governance programme, improve customer qualification, reduce the cost per customer contact and globally improve the value of its customer data.”

Conclusion

Master data management has been something of a slow burner but it has now reached the stage that it is a mainstream activity. The reasons for implementing it are varied: very often it is aimed at supporting marketing initiatives and the sort of customer (or client or patient) insight discussed above. However, it is also often, and more prosaically, about improved customer service—though that could be viewed as an aspect of marketing in its own right. Whatever your reasons for wanting to implement MDM, the sorts of facilities described for next generation MDM will be required and, as such, SAS is certainly one of the vendors you should consider evaluating.

Further Information

Further information about this subject is available from
<http://www.BloorResearch.com/update/2171>

Bloor Research overview

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About the author

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Philip started in the computer industry way back in 1973 and has variously worked as a systems analyst, programmer and salesperson, as well as in marketing and product management, for a variety of companies including GEC Marconi, GPT, Philips Data Systems, Raytheon and NCR.



After a quarter of a century of not being his own boss Philip set up his own company in 1992 and his first client was Bloor Research (then ButlerBloor), with Philip working for the company as an associate analyst. His relationship with Bloor Research has continued since that time and he is now Research Director focused on Data Management.

Data management refers to the management, movement, governance and storage of data and involves diverse technologies that include (but are not limited to) databases and data warehousing, data integration (including ETL, data migration and data federation), data quality, master data management, metadata management and log and event management. Philip also tracks spreadsheet management and complex event processing.

In addition to the numerous reports Philip has written on behalf of Bloor Research, Philip also contributes regularly to IT-Director.com and IT-Analysis.com and was previously editor of both "Application Development News" and "Operating System News" on behalf of Cambridge Market Intelligence (CMI). He has also contributed to various magazines and written a number of reports published by companies such as CMI and The Financial Times. Philip speaks regularly at conferences and other events throughout Europe and North America.

Away from work, Philip's primary leisure activities are canal boats, skiing, playing Bridge (at which he is a Life Master), dining out and walking Benji the dog.

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