

Master Data Management (MDM)

Mastering the Information Ocean



Mastery of information gives business control

In the modern business, the volume of information is increasing and the value of that information is becoming ever more critical to the business's success. The reality though is that over 80% of companies are relying on inaccurate management reports and that most organizations find themselves drowning in data. Although there are a large number of different challenges in turning data into information, there is one common element which drives problems in one third of customer service interactions, 30% of brokerage transactions and which drives up to \$50bn in costs within the US Retail supply chain alone – poor Master Data Management (MDM).

MDM isn't about fixing all of the data in an enterprise, it is about turning the key entities into information and providing the business with the control it needs to master all of the data that it has. In a world where businesses are drowning in data it is MDM which provides the key points of stability and islands of high quality managed information that enable a business to take control and start navigating successfully through the information ocean.

Implementing is a technology decision, approach is a business one

MDM is not a technology. There are technologies that can help but at its core it is about taking ownership and governance of information within an organization. Whether the decision is to implement these practises within current systems or to use a unifying MDM technology solution is secondary to understanding what you are going to govern and why.



The two directions of MDM

Every organization faces two problems when it looks at its current data issues:

1. How to clean up the existing mess
2. How to put in place the processes to manage master data going forward.

These lead to two clear, but related, directions for MDM. The first is the look-back challenge of cleaning up the data pollution that currently exists. This is about uplifting the quality of data to ensure that the look-forward strategy is working from a more stable base and to address the immediate concerns of the business with regards to data policy.

The second, and most important, is the forward looking approach which modifies business processes and user input of information to ensure that the quality is increased and organizational policies enforced. This approach looks to ensure that the data in the company never degrades again to its current level and will, over time, lift the quality of current information.

Theoretically only the look-forward strategy is really required as over time it will improve the quality of information. In reality, however, it is the combination of look-forward and look-back which delivers the best business benefit. It should be noted that there is no such thing as an effective look-back-only strategy. Uplifting the information quality at a point in time without having the forward looking process, governance and user input changes ensures that the exercise will have to be repeated over and over again without delivering an information set that the business can consistently trust.

When embarking on an MDM journey it is important to consider both forwards and backwards views to ensure the long term viability of information within the enterprise.

The three seas of MDM

When looking at managing information, most organizations, today, view information from a database or technical perspective. They view their core master data typically in three broad groups: "Parties", "Products" and "Locations". But this approach is unlikely to solve the problem as it does not directly address the business issue.

The key with Master Data is to recognize that there are in fact three distinct areas, or "seas" of Master Data which is a way of viewing MDM from a business perspective. The reality is that MDM is a business challenge and different areas of business require different approaches to MDM.

The first stage of effective information management, therefore, is to understand which sea of data you are drowning in and taking control of that business problem.

Figure 1: The three seas of MDM



Customer Centric MDM

Customer Centric MDM is about value creation for an organization. The focus here is on how to sell and service more effectively and how to obtain a truly global view of your customers and your dealings with them. The business case for Customer Centric MDM is therefore about improving the one third of interactions with a customer that are handled badly due to poor master information and reducing the marketing costs by making them more precise. Customer Centric MDM is not simply about understanding the core customer information, it's about understanding their relationships and the types of products and interactions they have with the business. Customer Centric MDM is about providing the full view of the customer. This means not simply creating high quality customer information but also ensuring that the full view of their purchases, products and interactions can be constructed in an accurate manner.

Customer Centric MDM is an outward facing business solution; it aims to create the most complete view of customers and prospects. This often involves integrating with external information sources, particularly business partners where sales are indirect. With the rise of social media and social marketing campaigns the external challenge of Customer Centric MDM is increasing. It is becoming important to integrate your internal customer view with the external social view of the customer – this helps coordinate social and physical campaigns and provides early indications of problems as customers are very likely to complain via social media to their friends.

The business challenge of Customer Centric MDM, therefore, is to truly understand how as a business you want to manage your customers and what rules and mechanisms you want to put in place to ensure that you have the most accurate information available on which to make customer decisions. Without a clear Customer Centric MDM approach it is impossible to understand the opportunities, history and risk associated with a business's customer base.

Customer Centric MDM drives millions of dollars a year in additional opportunity. The more federated the business and the more externally facing the customer parts of the business, the more value that MDM can deliver.

Enterprise Centric MDM

Enterprise Centric MDM is about taking control of your business internally and driving full enterprise consistency. This form of MDM tends to focus on the internal aspects of a business, the general ledger, HR, cost codes and internal assets including contracts and buildings. This form of MDM requires strong business governance in the standardization of regulations and definitions. With a company whose major asset is their people it's important to have a real global view of those people. Having one set of people being experts in "Assets" and others in "Property" causes real difficulties if you can't recognize that they are in fact the same skills. Equally, proficiency in Oracle UCM (Universal Content Management) doesn't equal proficiency in Oracle UCM (Universal Customer Master)!

Enterprise Centric MDM is part of turning federated businesses into unified concerns. It ensures that the organization can collaborate across its internal boundaries and enables active decisions to be made at a corporate level which are backed by a full view on the operating health of the company.

Enterprise Centric MDM is an internally focused approach where the ambition is to control and standardize how the company manages its information and information processes. This requires the internal parts of an organization to make it simple and effective to manage this information in order to provide the islands of trusted information from which high quality decision can be made.

Supply Centric MDM

The final "sea" for MDM is that of Supply Centric MDM. This is another externally focused MDM area which looks beyond the organization and into its supply chain. The focus is on optimizing and reducing costs. MDM here has an external challenge of mapping internal to external product catalogs to provide the business with the unified view of exactly what products are being bought. The job of Supply Centric MDM is to ensure that the company has a single definition of products independently of suppliers and that it is clear which suppliers are part of larger organizations where bigger procurement contracts could be signed.

Supply Centric MDM requires rigor and control in how you onboard suppliers and products and strict control on how you create your internal catalogs to prevent duplications. There is normally a significant amount of forward looking MDM required to secure the long term savings in this area and a large amount of work matching historical information into the new standardized catalogue.

Supply Centric MDM looks outwards from the organization and creates a unified internal view of the external landscape. By providing this internal control of a major data federation problem it becomes possible to simplify and rationalize internal processes and significantly reduce the organization's supply costs. This is almost more critical in nonphysical industries such as finance where the creation and expansion of product types can happen at an astonishing rate. Supply Centric MDM gives control and consistency while reducing risk and slashing costs.

Four types of master information

In all business problems there are always three types of information which need to be mastered:

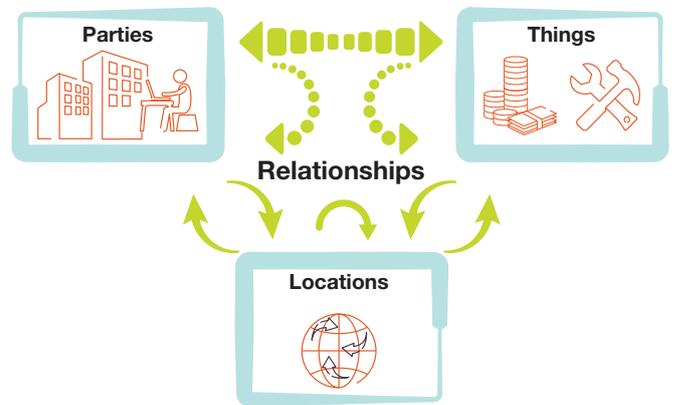
1. Parties – individuals or organizations, customers, suppliers, employees, etc
2. Assets – “things” whether they be real (spades), virtual (contracts) or a combination of both (gold futures) 4
3. Locations – physical such as geographical or postal and electronic such as phone numbers, email addresses or twitter accounts.

These are the core information types that need to be managed and it is these elements that require the matching and merging rules as well as onboarding and lifecycle processes clearly defined.

The final type of information to be mastered is the relationships between these information types: the locations for an individual, the corporate structure of a company and the part structure of a major product.

In order for MDM to be truly successful the organization must look to manage each of these within the various business domains rather than looking to manage the information types as data objects across the enterprise. It is extremely limiting to consider only a single entity when mastering information; solutions which attempt to take a technical and entity-centric approach can often initially appear to offer reduced costs but in reality they fail to deliver on their business objectives and end up costing significantly more as new entities are added. The customer view isn't complete without the product view.

Figure 2: Figure title



The supplier view is nothing without the unified catalog. Every MDM business area needs to consider all three of the information types and to be clear which, if not all, of them are required to be mastered.

Taking a business-centric view of MDM makes it clear that a database or technical view of customer or product mastering is like wondering whether the rudder or the sails are required when steering a boat. The answer is that when looked at from the perspective of the boat you are going to need both of them.

Location is slightly different in that most locations have external bodies which dictate their values. The key question with locations, however, is whether channel shifting from physical to electronic approaches is important in that area. If it is then you must treat locations in the same way as parties – a standard type with subtypes. Having an MDM solution that has different structural approaches for physical and electronic locations is only going to hinder channel shifting.

Relationships are the final piece. It is these that help build up the full picture of the business, the relationship of the customer to their products and locations, the relationship of the supplier to its parent organization and the relationship of cost codes across the group.

With these four types of information it becomes possible to create the trusted islands of information stability which help the business to navigate the broader ocean. This is what makes MDM simple and powerful: the combination of business clarity and simplified information models. The challenge is that to achieve simplicity a higher degree of rigor must be instituted than is in place with most businesses today.

Five classifications of information

Not all information is created equally and a major problem with many MDM implementations is treating all information as if it requires the same amount of control, distribution and rigor. The reality is that there are five broad classifications of information, two of which are relatively static between the three "seas" of MDM and the remainder are down to the local business demands. These five are:

1. Core – this is the information that is required for the unique identification of the entity

Figure 3: Figure title



2. Sync – this is information which is common between systems and needs to be kept synchronized
3. Share – this is information which is calculated offline but needs to be shared operationally
4. Local – this is information which can, and should, be shared directly from its source
5. Technical – these are technical identifiers which enable the system cross-reference to be built.

MDM is fundamentally only about Core, Sync and Technical and these elements have different purposes and governance models.

By concentrating MDM on these core areas and treating them each with the required rigor and control and critically, and not polluting the core MDM with additional information it becomes

possible to create a simple technical solution which delivers the business benefits. Too often MDM solutions are hampered because they become complex technical solutions which attempt to address centrally a problem that is better solved locally.

MDM can be made into a simple technical solution by concentrating on the business solution required and addressing only that information which is required to create the master information, and delegating other information sets until later phases or into non-master (Share, Local) categories. This is the underlying principle of the Capgemini LEAN MDM approach.

Mastering the Core

Core attributes are those which are required to uniquely identify an entity independently of their system identifier. These are the "natural" identifiers for an entity and it is these elements which are used in matching and merging to create individual unique identities which can then be mapped back into their multiple organizational representations.

The key to the core information is the recognition that it should be the minimum amount of information required to uniquely identify an entity, not every single attribute that could potentially be useful in identification. The Core therefore is the area where quality has to be at its highest and the

Figure 4: Figure title



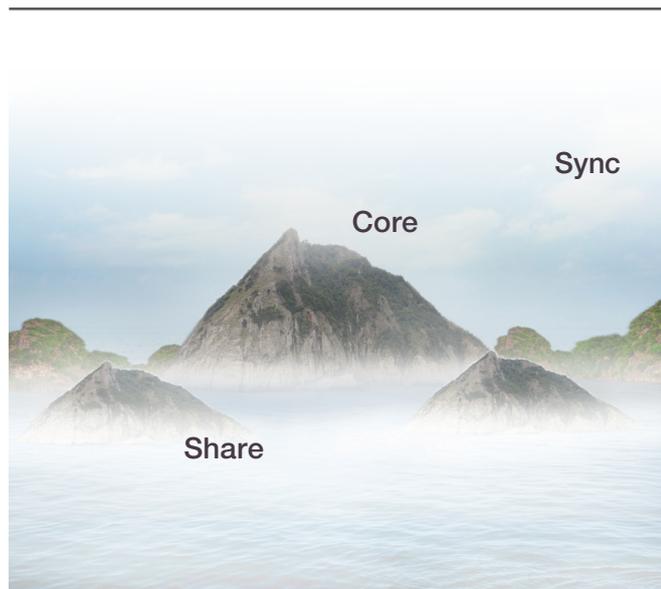
greatest investment made in both forwards and backwards looking MDM to ensure that entities are correctly described. Some central policy needs to be agreed and then enforced consistently across the organization. Core information is always considered to be synchronized.

Keeping on the same page

The second set of information is that which needs to be consistent across multiple systems. This is information which is edited and modified in multiple places and therefore needs to be synchronized. This information set, therefore, is one where multiple areas must agree on a common policy and on questions such as information latency. The rigor required is not as significant as in the Core but the impacts of disparate quality rules will rapidly become apparent.

Critically in a pure MDM sense, synchronized information should, but does not have to, be mastered in a common set of policies. It is possible to have in place a synchronization mechanism which does not enforce quality standards and rules. This is rarely desirable in the long term but it does mean that an iterative approach can be taken when looking at MDM programs. The key factor with synchronization is that it is done where multiple parties and systems are editing the same information, not simply where one party is editing and others want to read.

Figure 5: Figure title



Technical keys are the business key

The final part of MDM is one that is often relegated to an internally focused piece of MDM and which is even frowned upon by some MDM technologists as being part of “just” a registry model. This dismissing of a technical piece misses the reality of its power for the business. The keys are the primary navigation routes between systems. It is these pieces of critical information that provide the assured mapping between the core information set and the other information related to that entity that exists within the enterprise.

Although they are technical keys their real power is that they provide a clear map for the business, linked to the highly trusted core information, which describes all of the places that related information is stored. The technical keys, therefore, are not simply a technical element but represent the ability to shift decision making away from the data warehouse and into the main operational stream.

The power of modern MDM is that it provides the business with the information cross-reference which enables the full global map to be created.

Share is not Sync

One group of information that is often mistakenly included within the Synchronization group is that which one part of the business creates and modifies while others wish to consume. Risk ratings, marketing assessments and other analytic elements are included in this group. These are pieces of information where there is a clear business owner and where the quality of the information is the sole responsibility of that business owner. The rest of the business then takes that information and uses it within its own analytical and operational processes.

Share is not the same as Sync as it is a simple publication of information from a single trusted source. Shared information can often be simply local information which for operational reasons needs to be either sent to the various target systems or stored within an operational data store. It is very important to recognize in the Share model that the governance of the information remains with the creating business owner and that the information is not considered available for modification by consumers.

Local is global

The final set of information is where many organizations make their mistake. There are large swathes of information which would be better off being left in their source systems and exposed via service-based interfaces. The MDM technical keys mean that it is much more effective to leave the information within source systems and use Service-oriented Architecture (SOA)-based approaches to make it available operationally rather than dumping the information into the MDM solution.

The more information that can be left in its source systems rather than moved into a “Share” the better, as it reduces the information latency and helps ensure that the governance on the information remains as close as possible to its point of control. An approach that leaves information stored locally is able to enforce security rules locally rather than having to enforce these differing policy rules within a centralized store, or more likely failing to enforce those rules successfully within a centralized store.

The other big advantage of leaving information locally is information latency. Moving information into a “Share” inevitability means that it is not the current real-time view of that information. For elements which are calculated after hours this may not be a problem but for dynamic information such as stock levels and credit balances it is much more critical to have this information as accurate as possible. With organizations looking to drive more efficiency and accuracy in their operations the objective should be to minimize “Share” and maximize “Local” as much as possible.

One timeframe – real-time

The final aspect of modern MDM is the switch from post-transactional to operational. The history of MDM has been as a technical filter before the data warehouse. This provided decent management information but didn’t provide an update to the core operational processes. This split between post-transactional accuracy and operational inaccuracy meant that it was possible to determine afterwards what would have been the right decision had the business had the right information. The advantage of modern technology infrastructures, particular those which are based around SOA principles, is that MDM can move out of the darkness of the post-transactional world and bring high quality assured information into operational processes.

The power of the technical crossreference in MDM when allied to local information stores is that it becomes possible for the same information to be available operationally as is available in the data warehouse with the same high quality, but with much lower information latency. MDM therefore helps to solve problems not simply after the fact in information reporting and strategy but within the core enterprise processes themselves.

Summary

MDM is not a complex technical challenge when viewed from a business perspective. The three clear business “seas” of MDM: Customer Centric, Enterprise Centric and Supply Centric have different business drivers and, critically, different business governance models. By focusing on the business domain it becomes possible to construct simplified technical solutions which address each of these domains and which take a more pragmatic and operationalcentric view than the MDM solutions which currently focus on the data warehouse.

MDM, when viewed from a business perspective, spans multiple technical areas but provides a business-centric, unified, highly trusted set of core information from which the full information map of a customer, supplier, product or enterprise can be created.

MDM is not about providing that view, it is about enabling that view and ensuring that the map is as accurate and complete as possible. When looking at the masses of data in an organization, it is these islands of highly trusted information and the map that they provide which deliver the levers and directions to enable business to take control in converting data to information. Mastering information across the enterprise starts with understanding which information ocean you are drowning in and then building these islands of stability. From there it becomes possible to uplift the quality and trust more generally and to clearly identify how information is related as a business rather than simply as a series of technical data stores. By rigorously focusing on this challenge and creating the simplest possible solution that delivers the islands of stability, it finally becomes possible to reliably and efficiently master the core information in the enterprise to enable navigation across the enterprise information ocean.



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