Master Data Management
"From frustration to a comprehensive approach"

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Over the last few years, businesses have further extended their ERP activities from process optimization to master data management. The extent to which ERP has been embedded in organizations has made it clear that master data is as vastly complex as it is important. Many businesses and their boards of directors who are considering embarking on this kind of far-reaching professionalization policy concerning master data first want to better understand the implications of such a step, ideally through a case study.

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Introduction

"Exactly which benefit will master data management produce?" A variety of reasons can be mentioned to explain the increasing interest in the importance of master data. From the viewpoint of process optimization, for example, there is a growing awareness that correct and accurate data related to transactional processes is a *sine qua non*, for ERP processes in particular but basically for all automated processes. At the same time, people are becoming increasingly aware of the fact that the growing amount of management information, reports and dashboards within organizations increasingly relies on the same source data. More and more often, external auditors are making strong demands for compulsory reports, basing their approach on Basel, Solvency, SOx, Reach[1] and privacy legislation, among other things. In addition, in their professional checks, IT auditors are also placing increasing emphasis on data. Nowadays an audit is expected to result in a report backed up by a correct and complete audit trail that is similarly based on correct, complete and timely (master) data. In this context, it is a critical precondition that master data must be managed effectively. The demand for accurate and complete information throughout different corporate activities is extensive.

1   REACH: Registration, Evaluation and Authorization of Chemicals is a system for registration, evaluation and admittance of chemical substances that have been produced in or have been imported into the European Union. The goal of the REACH system is to control the risks of chemical substances, such as the risks of toxic disasters, fire and explosions, health damage to employees and consumers, and damage to the environment.

The fact is that data management as such is considered boring by the majority of staff

This high degree of dependencies underlies the fact that unreliable data often causes problems in organizations:

• missed opportunities in terms of functionality (e.g., automated process activities and self-regulating ordering procedures)
• increased risks of inefficiencies in data and operational processes due to rework ([Jonk11] [Unen12])
• reduced reliability and accountability of reports; these must be correct and complete at all times, enabling management to make appropriate decisions
• extra expenses due to incorrect, incomplete and untimely data (e.g., incorrect payments, fines for evasion of the law, damage to the corporate image).

With the growing awareness that incorrect, incomplete or untimely master data may be the root cause of such corporate problems, more and more businesses are aiming to improve the quality of their master data. As a rule, the first stocktaking immediately shows that data management is an extremely complex matter. There are frequent differences in source systems and quality, overlapping targets, divergent contexts and interests, and vagueness with respect to ownership. Dealing with this complicated situation properly often demands an undesirably large and erratic budget. In the current economy, securing budget funding has long ceased to be an automatic given. Businesses increasingly wish to have access to a business case in advance, to form the basis of a cost-benefit analysis. Some data aspects can easily be expressed in terms of money (cost efficiency through process optimization), but the advantages cannot always be valued properly beforehand (better reports, displaying compliance, and saving on audits).

This is often what makes data management business cases fragmented and incomplete. Businesses tend to focus all their attention on those corporate sections that cause the most nuisance, and tackle only specific obstacles. Or they choose to organize data management on the basis of predetermined benefits alone.

A food retail company, for example, used a business case with a view to saving costs in the data management process. They saw that the number of FTEs involved could be reduced and corrections rendered unnecessary, ensuring that subsequent data clearance virtually became a thing of the past. The savings realized on an annual basis would be so high that it was a sufficiently persuasive business case.

However, it did not cover all corporate issues. This meant that, at the end of the improvement process, they recognized that there were many more matters in this area with room for improvement.

A solid business case

The question for organizations is: how can we make the most complete business case to accurately substantiate our master data management-related problems.

A business case is regarded as a financial justification for an investment to be made, or as Donkers [Donk05] puts it, "A business case is an investment proposal, a justification why it makes sense to carry out the project. In a good business case costs, risks and benefits are weighed against each other."

However, there is more to a business case for data management.

For a thorough business case and lucid approach to data management, it is important to demonstrate the correct relationship between business-related problems on the one hand and data-related problems on the other.

Accordingly, there is an N:N relationship between the two. Therefore the business case should focus on those business problems caused by data quality issues and areas for improvement within the organization.

After linking the corporate problems to data management, it is advisable to foster a good understanding of data management on the part of the relevant stakeholders. They are not really familiar with the matter, entailing the attendant risk that not enough funds will be made available.

Figure 1. Focus on the corporate problems related to data problems.

In the business case, always present all essential obstacles from two perspectives. Make clear what the obstacle-related costs are, and also indicate the precise risk if data management is not functioning properly. By following this principle, the complex character of data management is made more readily understandable in the corporate context.

Divide the Return on Investment into cost savings and qualitative improvements. A large chemical company made this distinction by showing, on the one hand, opportunities in terms of improvement in management and management information. It dealt with aspects such as the reliability of information, lack of innovation in primary processes, fines, and missed payments and turnover. On the other hand, it represented the savings that could be made on jobs on a global basis.

Another principle is to avoid data-specific problems and jargon with which the management is not familiar. When drawing up its business case for data management, a large logistics company was very keen to focus far less on data than on corporate problems by advancing the proposition, "Either relate the business case for data management to the business or run the risk of failure." The fact is that data management as such is considered boring by the majority of staff. To demonstrate the added value to the stakeholders in particular, the firm focused on getting to the bottom of all data-related aspects. Time-consuming it is, but they made a thorough study of the various data definitions, objects, ownership, impacts and improvements. The ensuing effect was that a good understanding of the importance of data management was created at all levels in the organization. In this way, creating a support base was only a matter of time. At the end of the day, this comprehensive approach resulted in a balanced data management program within the organization.

Typical pitfalls

In a nutshell, there are a number of pitfalls in trying to draw up a good business case:

• A fragmented or limited approach, which accounts for an inadequate support base with a view to the investment requested.
• Different sections of the organization use the same data in different ways. This accounts for the fact that the impact on the person at the start of the process (data producer) differs from the impact on the person at the end (data consumer). The art is to draw up a business case for the entire organization and not just for a limited group within a chain or organization.
• Lapsing into data terminology. The business will fail to recognize its own problems, and discount the subject as irrelevant. Make the business case clear at all corporate and knowledge levels. What is perfectly clear to an IT manager may well be inscrutable to the end user, and vice versa.
• A lack of holistic vision in the structure of the business case. If it consists of a concoction of single examples and elaborations, the model lacks structure. Without a model or reference, a business case is harder to understand and relate to concrete examples.
• Regarding the business case as a final product. Data is flexible and apt to change in character. Particularly in the case of a long-term project, it is important to keep a finger on the pulse and verify whether or not the proposed benefits remain in line with the current state of affairs.

An extensive review of data for the business case

The case for the logistics company described above demonstrates that it is better to have a close look at all relevant aspects if one wants to have an adequate support base for a business case. This applies to internal as well as external factors.

Developments and trends

Master-data-related problems differ between businesses, and each organization has its own problems, with specific backgrounds and causes. Yet they are all rather similar within the context of specific business components or lines of business. In retailing, for example, e-commerce is a growing market And e-commerce is dependent of master data management to an even greater extent than the retail trade. In this day and age, with e-commerce becoming more and more important to companies, it is essential to provide customers with the correct information, especially in aspects such as product price, photos or even videos. Companies that are able to use the correct data in the correct way are the true winners in the eyes of the customer. Websites that cannot offer complete information or visual material (a mortal sin in e-commerce) will find that customers will buy far less from them than from the competitor who can. This is a missed opportunity in an age of growing e-commerce. An additional factor is that companies working with e-commerce, particularly

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retailers, will have to deal with new European laws and regulations as of 2014.[2]

In the financial world, there are problems like having to comply with ever-changing laws and regulations, e.g., Basel and Solvency. But developments such as SEPA also demand a fully developed master data management situation.

Companies participating in the world market seek opportunities for global reporting. In the field of spending analysis in particular, there is a strong need for correct and unequivocal master data.

Efficiency in supplying master data

Insufficient master data management processes usually result in rework, in creating data and in the workarounds that have crept into the production processes. This extra work can be recognized by supplementary actions when completing and rectifying data – and also by discussions and consultations that are repeated too often when master data must be used correctly for management information or data logistics. A simple overview will suffice to show where savings can be made if data are entered on a "first time right" basis.[3]

Business Process Optimization

In the last few years, companies have increasingly organized their processes in a "lean" manner. The focus has always been on "waste elimination" rather than on the corresponding data logistics. But it is the very (poor) quality of data that limits the extent of process optimization. Workarounds and possibly even rework based on inaccurate data are still quite common in the majority of companies. This seriously interferes with the further development of process optimization, which makes it impossible to achieve the intended efficiency. Add to that the expenses for rework, and making the business case is a piece of cake.

Planning, purchasing and stock control

Adequate purchasing and stock management keeps a company flexible and minimizes costs. Yet few companies are seriously active in improving their data in order to optimize purchasing and stock processes. In practical terms, this means that increasing effectiveness can be achieved when it comes to purchasing materials and products. But it also means that it is not always possible to meet certain expectations on the part of the customer, such as early delivery. Data management can also help achieve cost savings at the end of a production cycle. Companies that have a good overview of the (required) materials and products that are available, including the necessary quantities, are in a position to bring cost cuts into force, provided this is based on correct information. Experience has shown that having one's own data in working order always results in a win-win situation.

How to arrive at a solid business case for master data management

The complexity of the circumstances and various pitfalls may all too easily frustrate one's efforts to arrive at a good business case for master data. It is advisable to generate an organization-wide support base by means of a structured comprehensive approach, which is based on the four layers of master data management (MDM): *Governance*, *Process*, *Content* and *Systems*. These layers are connected at operational, tactical and strategic levels (see Figure 2,[Jonk11]) in such a way that they create the opportunity to construct a broadly based and complete business case.
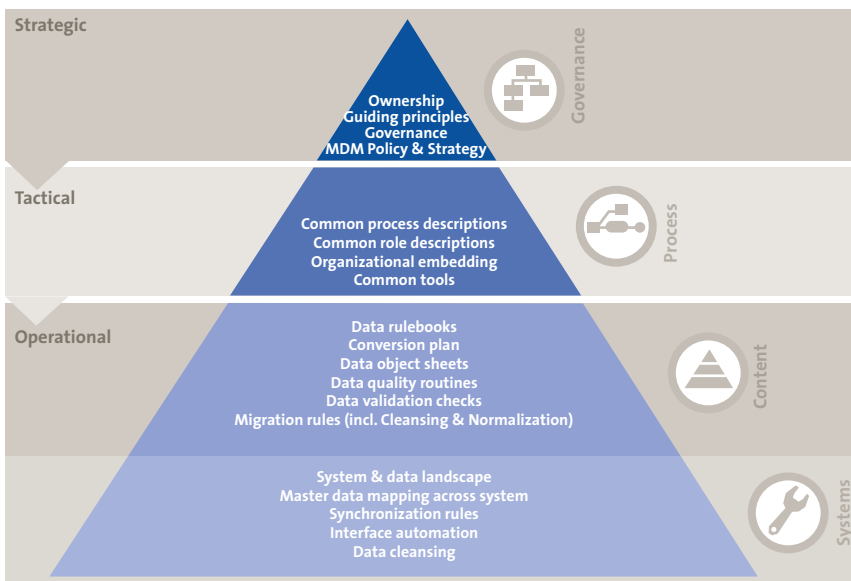

Strategic

Governance

Ownership
Guiding principles
Governance
MDM Policy & Strategy

Tactical

Process

Common process descriptions
Common role descriptions
Organizational embedding
Common tools

Operational

Content

Data rulebooks
Conversion plan
Data object sheets
Data quality routines
Data validation checks
Migration rules (incl. Cleansing & Normalization)

Systems

System & data landscape
Master data mapping across system
Synchronization rules
Interface automation
Data cleansing

Figure 2. The four layers of MDM.

Approach

When drawing up a business case for data management, a number of pros and cons need to be considered in terms of pitfalls, problem-solving and risk avoidance. At all times, exactly how detailed and complete this deliberation should be depends on the business or even the business component. Whatever the situation, the case should always focus on the consequences of poor data quality. In this context it may well be worthwhile looking at projects for which solid master data is a prerequisite, in addition to merely considering the frustrations ensuing from regular activities. It frequently happens that the targets of a project cannot be achieved for the very reason that the master data is not functionally sound. If MDM is established as a precondition, the MDM program can join in with and support the business case of the project. It may be advisable, in fact, to join in with an important project in order to get the business case for master data fixed up.

Recognizing master data problems as a cause of corporate problems is a prerequisite for a data management business case. This requires a systematic approach.

This approach comprises five steps.

Step 1. First of all, the corporate issues need to be identified at every level, per MDM layer (*Governance*, *Process*, *Content* and *Systems*), as described in Figure 3.
Step 2. Then the problems need to be related to possible implications, the impact on management, and risk avoidance. At this stage, a first assessment can be made of the costs and the organization-wide consequences ensuing from these issues.
Step 3. Directly afterwards, the relation with master data (management) needs to be examined. If there is no relation between the master data (MD) and the issues found, the problem cannot be part of the master data management business case. See also Figure 2.
Step 4. If a relation is found to exist, a link should be made with a cost-and-impact analysis.
Step 5. If the master data and the company are so closely interwoven that it is impossible to determine the direct costs and the consequences (because the risk has not yet presented itself), the fifth step in Figure 3 will be necessary, in order to make the business case stronger. It involves a risk analysis, so that the issues can be made more concrete and expressed in terms of money.

It is important to apply this approach to all MDM layers. It reduces the risk of encountering pitfalls such as a frag-
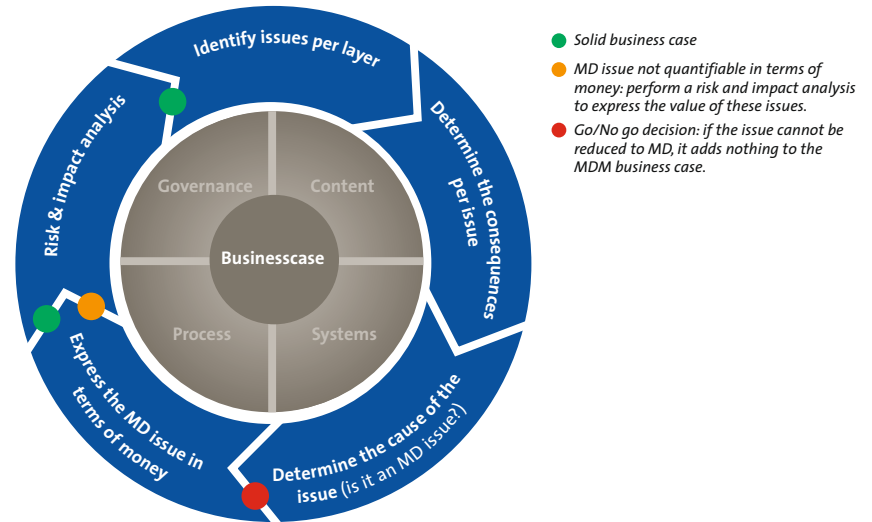

Figure 3. **Business case model on the basis of the four MDM layers.**

mented and incomplete business case, or presenting a case that is exaggeratedly oriented toward data and IT, or is lacking a broad support base. In Table 1, for each layer we have listed a number of examples that could be used as a basis for a business case.

Conclusion

Usually an organization first notices problems with data management in actual practice when dealing with primary processes, decisions based on incomplete reports, or fines imposed by supervisory bodies. The ability to relate and quantify these aspects on the basis of risk mitigation and removing obstacles constitutes the basis of a good business case for data management.

Both the retailer and the logistics company described in this article received support and funds for their business cases. However, there was a difference in approach. In the first case, the scope was more limited. From the beginning, the logistics firm aimed at realizing a comprehensive data management program. The difference lies in the long-term objective. In the long run, a case based on cost-saving in data processes will limit the desired efficiency and innovation. Companies directing effort to master data management do well to compile a list of data-related issues and any current improvement projects or initiatives for which master data is a precondition. For the sake of completeness, it is a good idea to use the four MDM layers as

guiding principles. In this way, the retailer might be able to identify existing projects for e-commerce, including the relevant laws and regulations, in advance. Organizing fully developed e-commerce activities could result in a case for increased turnover, better customer relations, and meeting the compliance aspects. In this way, securing a support base for the required investment will run far more smoothly than a business case that is solely data issue-related, with a limited scope.

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MDM layers	Issue	Cause	Consequence
Governance	Incorrect management reports	Incorrect and incomplete data	Decisions made on the basis of incorrect information
	Incorrect strategic decisions	No central overview of data and wrongly placed roles and responsibilities	Increased risk of incorrect decisions based solely on IT
	Decision-making process with regard to data is at operational level	No decision-making structure	Data logistics do not link up with the company's vision, innovation and strategy
Content	No unequivocal view of customer	Data object can be found in different formats in different systems	Missed chances of sales and process optimization
	Contracts cannot be traced back to the customer	Data are not synchronized and integrated	Missed turnover
	Products with incorrect selling price	Data are incorrect or not up to date	Missed turnover and claims for compensation
Process	Workarounds (repairs)	Incorrect or incomplete data	Extra costs due to manual repairs
	Double entries of sales orders	Incorrect or late data	Extra costs and loss of customers
	Lead time of process	Incorrect or incomplete data	Inefficiency in process and increased risk of missed turnover due to delays
Systems	No "plug-and-play" (SOA)	No data synchronization	System implementations are extra labor-intensive and miss deadlines
	Problems during migrations	No data synchronization or integration	Rationalizing IT landscapes is delayed over a long period of time
	Links between systems are running less and less smoothly	Inconsistencies in master data across different systems	Constant repairs of system links to resolve recurrent problems

Tabel 1. **Businesscasevoorbeelden per MDM-pijler.**