

# Master Data Management in SAP

MDM: there is only one truth



**When we hear the term “master data management” and the associated quality assurance objectives concerning the quality of data in IT systems, a question that might come to our minds is “Haven’t we just done that by implementing the ERP system and the data warehouse?” However, the more systems you have, the more versions of the same data are maintained according to templates. Their consolidation and unification is ensured by Master Data Management.**

## Work at the foundation

One of the preconditions of successful performance is the appropriate management of master data. Master Data is the core of critical information on which transaction data – and consequently our daily business operations – rely. Master Data cover data from four key areas:

- products and materials (e.g. product attributes, list price),
- customers (name, address, telephone number etc.),
- vendors (e.g. parent entity, address, offered parts),
- employees (name, position, address, organizational unit).

Companies should be aware of different approaches to the abovementioned data. The idea of integration of the databases used by a company and the information contained therein is not new and was actually the one of the reasons for the implementation of integrated IT systems. Unfortunately, the implementation of even the best ERP tool is not sufficient.

In the majority of large companies, in addition to an ERP system, a number of other applications are used, such as CRM, document flow, product life cycle management and other systems supporting the daily business operations. In different applications, the same customer may have different ID numbers. What’s more, in some applications one entity may be flagged as a customer and vendor at the same time, while in other it has to be entered twice: as a customer and separately as a vendor.

Maintenance of consistency and effective master data management becomes more difficult with a growing number of IT systems in the company and the growing number of users authorized to enter the data. Hence, the problem affects most severely large organizations with a complex IT infrastructure.

Inaccurate and inconsistent data can be a source of numerous problems: unexecuted deliveries, incorrect invoices, failure to conduct a proper analysis of relationships with the customers and difficulties with the entry of new master data (e.g. products) and updating old master data (due to numerous target systems and information distribution channels).

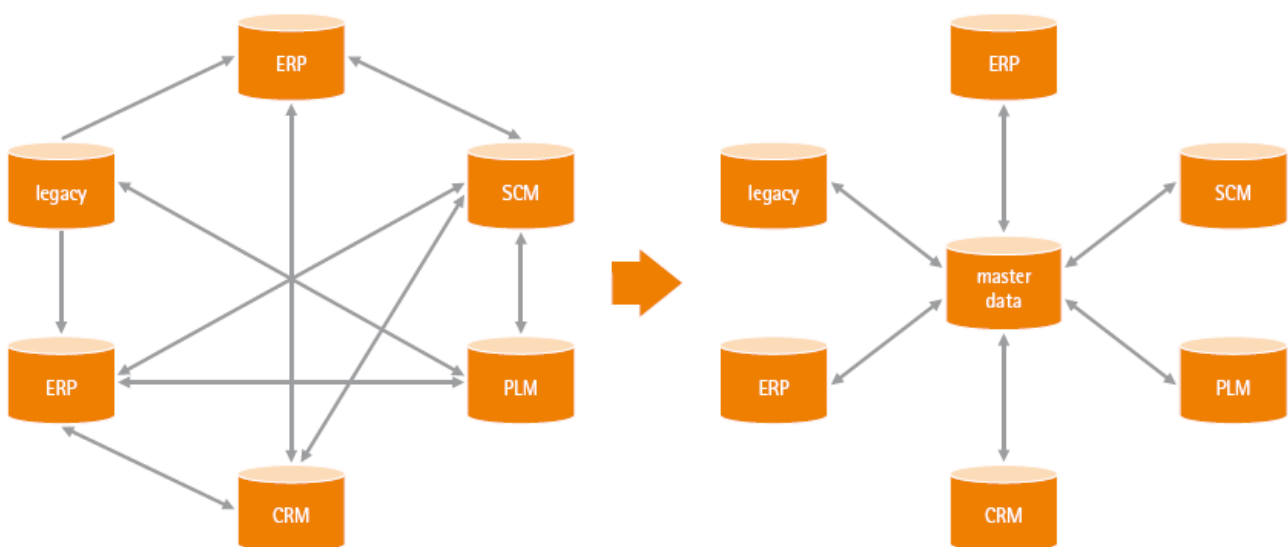
Hence, the definition and maintenance of master data should be an important task for every company, since the data are used for decision making purposes by all company and serve as an input for all business processes executed by the IT systems. The key objective with regard to the master data is to ensure their:

- correctness,
- completeness (do the data include all information needed to execute a process?),
- consistency (are there no conflicting or duplicated data), and
- compatibility (are the data compatible with the adopted standards and formats?).

The efforts aimed at ensuring full integrity and high quality of data stored in different systems and used for different purposes have only recently been supported by the availability of a dedicated technological solution called Master Data Management, MDM).

### One version of the truth

MDM is a group of solutions encompassing appropriate methodologies, models and IT tools used to create and maintain a single version of the master data. Solutions of this kind allow for data unification and, at the same time, offer tools for consolidation and central management of master data in order to support all processes in the company.



### Change in the IT landscape following the implementation of MDM

Thanks to centrally managed data, the company is able to react faster to the changes occurring in its environment. Management of business critical data is also a foundation for the development of an Enterprise Service Oriented Architecture (eSOA).

Selection of the right IT tool to support master data during a project of implementing master data management in a company must be preceded by a number of steps. The process starts with identification of the master data sources and the senders and receivers of master data. The following steps include metadata analysis, identification of persons responsible for data reorganization, implementation of a data governance program (in simple words, implementation of a set of supervision rules and best practices concerning master data) and defining the rules of data management.

Only then can the model of master data be defined and the right IT tool selected.

MDM tools ensure achievement of „one version of the truth” with the master data. A joint definition of data is created (a so called „golden record”) to which the same objects distributed around various systems are mapped. In this way, a central repository of data is established.

The internal structure of data storage is not important for the user anymore. Looking for information about the customer data, for example, the user retrieves data in a standard format defined by the company, regardless of which IT system is searched.

It might seem that such a repository is simply another database in the company, however, the difference between MDM and a database is similar to the difference between word processor and word editor.

**Dynamic MDM market**

In 2008, the MDM market became the fastest growing segment of the software market. According to Gartner market research, the global sales of master data management IT tools in 2008 totaled USD 1.3 bn (24.1% up on 2007). Despite the economic crisis, the analysts forecast a stable growth of this segment until 2012. The recession forcing cost cutting and efficiency driven initiatives creates additional motivation for implementing the MDM technology.

MDM uses a database management system but disregards the functions of a relational database in almost all search, sorting and retrieval queries. The search takes a form of a drilldown search which starts from the whole repository and gradually, the scope of data is narrowed down using filters.

Thanks to MDM, in the whole network of systems there is only one location with predefined models of the business objects which allows for the import of data from any source, as well as their central management, publishing and version control.

Numerous off-the-shelf master data management solutions are available on the market. When choosing a product, however, attention should be paid to the question whether the tool integrates the entire landscape of systems. For example, some of the specific areas of master data management are Customer Data Integration (CDI) or Product Data Integration (PDI).

It is worth checking whether the offered MDM product includes such functionalities or whether the integration is limited to the general environment only. Otherwise, the implementation will require considerable development efforts and its success will be uncertain.

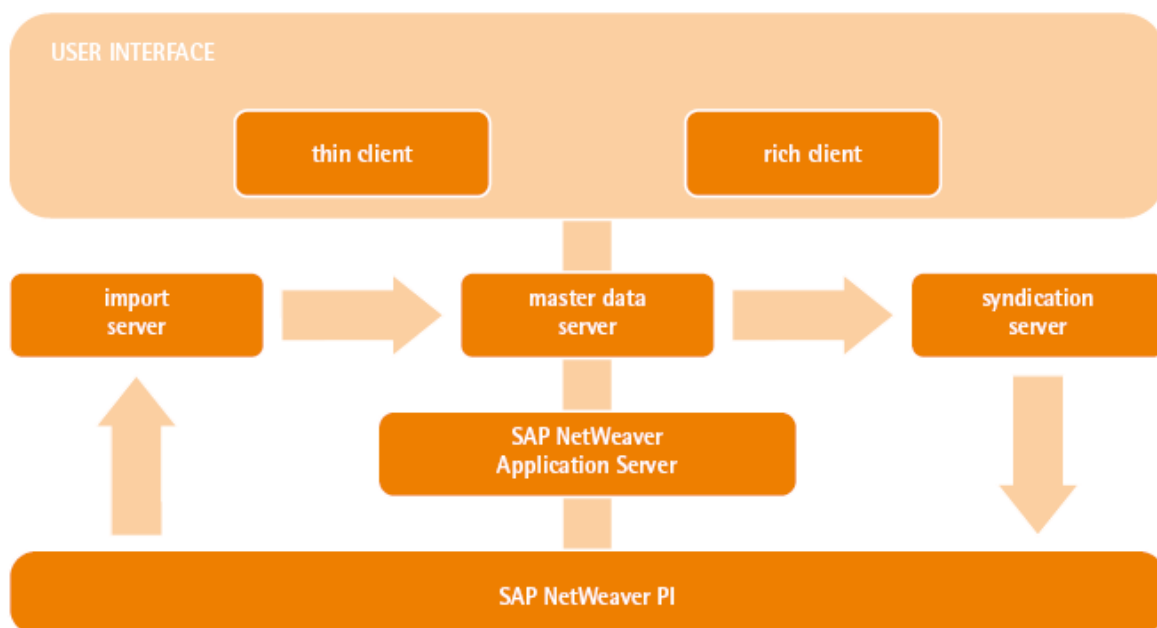
MDM tools should also support data search and quality improvement and maintain data hierarchies and versioning. Data versioning is of critical importance since the history of each master data record must be maintained in order to ensure its quality and accuracy over time.

SAP AG offers a comprehensive master data management solution which has been created by extending PCM (Product Content Management) to include all types of master data objects. The tool is called SAP NetWeaver MDM.

**SAP NetWeaver MDM**

SAP NetWeaver MDM supports archiving, expansion and unification of critical data and their consistent distribution to all systems in the IT infrastructure of the company. The tool encompasses Customer Data Integration (CDI), Product Information Management (PIM) and Enterprise Information Integration (EII), together with Enterprise Application Integration (EAI) and Extraction Transformation and Loading (ETL).

In order to support enterprises in the maintenance of their master data, six key business scenarios have been developed:



■ MDM SAP NetWeaver architecture

- Master Data Consolidation – consolidates master data objects from disparate systems and stores them in a centralized repository, detects and cleanses duplicated data and manages local object keys to ensure communications between different systems;
- Master Data Harmonization – forms an enhancement to Master Data Consolidation ensuring distribution of consolidated data to all the integrated, remote systems. As a result, global synchronization of data is achieved e.g. a change in the customer address will be visible in all systems in which the address is stored;
- Central Master Data Management – provides centralized management of master data instead processing them in client systems, like Master Data Harmonization. Subsequently, the cleansed, newly formed data are distributed to the integrated systems where they can be supplemented by locally relevant information;
- Rich Product Content Management – supports Product Information Management (PIM) and additionally offers a possibility of grouping products together, creating relations between products and the associated graphics and can be used, for instance, to prepare products catalogs, both published on the website and in a printed version;
- Customer Data Integration – consolidates information about the company customers. Together with the transaction data, can be used to generate comparisons and summaries;
- Global Data Synchronization – ensures synchronization of consolidated information about the objects from global data pools, such as 1Sync, in order to be able to send data to business partners in industry acceptable formats.

### Solution architecture

Presentation of the technical aspects of this solution is not the purpose of this article, however, certain properties of the architecture proposed by SAP are worth noting. In order to fully support master data maintenance, the data access layer delivers full user interface.

Occasional users can take advantage of portal panels called iViews. SAP created an MDM-dedicated Enterprise Portal package which is a thin client offering the possibility of viewing and editing object contents without a need for local installation. The iViews panels are highly configurable and allow for workflow integration with Universal Worklist (UWL).

### From a pilot to production service

SAP MDM is becoming increasingly interesting for large corporations which, in most cases, use many other IT solutions in addition to SAP. In the case of organizations with global operations and an extremely complex IT infrastructure, implementation of a new master data management solution may be a high-risk project. That is why corporations usually decide to start from pilot projects, the purpose of which is to assess the future benefits from the new tool implementation and identify the potential risks. In the last months, BCC consultants took part in such a pilot implemented in one of the global corporations. Under the project, SAP MDM was launched in the scope of central repository of customer and materials master data. The clients of the MDM system included SAP ERP and several other applications. In addition to SAP MDM, SAP Process Integration (formerly known as SAP XI) was used. Currently, the results of the pilot project are analyzed and the corporation is considering a full-fledged implementation project. The experience gained during the project referred to above and a number of other projects is the subject of an article entitled "Provide more efficient Master Data Management integration with SAP's new mass interfaces and extractor programs" by Michał Krawczyk from BCC, published in the prestigious SAP Professional Journal in July 2008.

*Michał Kowalczewski  
e-Sales Team Leader, BCC*

Naturally, there is also a possibility to create web forms (other than EP) using standard Java MDM APIs. Furthermore, in addition to portal-based interfaces, a high-quality user interface based on Microsoft Windows is also available to support key user activities.

The rich client includes such modules as MDM Import Manager (User Interface for data import from different sources), MDM Data Manager (a tool for data searching and editing and creating hierarchies and taxonomies), MDM Syndicator (User Interface for exporting the final, integrated data to various systems in the form of xml files), MDM Publisher (facilitating the preparation of product catalogs) and Image Manager (helping to associate the objects with graphics and other multimedia items).

Another important aspect is the Language Selector handling the multi-language platform. Thanks to special language layers implemented in MDM, not only the data but also metadata are stored in numerous languages. The MDM server is the central location of all repositories, equipped with such functionalities as the search engine or data syndication and validation.

The repository structure can be flexibly designed due to the model-driven approach and using the master data meta-model. Communication with business applications (both SAP and non-SAP) is maintained through SAP NetWeaver PI, while the technical monitoring component of the MDM server uses CCMS and ABAP APIs and is supported by SAP NetWeaver Application Server. Three types of API's, in addition to Web Services, secure efficient access for the developers.

The solution proposed by SAP stands out against the background of other similar products in many respects, including the architecture, user interface, data consolidation or even the implementation method. The flexible repository structure supporting unlimited expansion of configurable objects is worth emphasizing. Thanks to readily available modeling tools, the need for object definition coding has been eliminated. As a result, modeling is intuitive and business-driven. Quick and scalable access to data is also of fundamental importance.

### High quality data

Despite the numerous advantages mentioned above, MDM implementation will not solve all the problems at the organization level and will not "magically" rationalize the company's processes. It can support more efficient management and structuring of master data.

The short-term goal of implementation of MDM-type tools is to ensure consistency of data in disparate systems which, in a long run, should lead to centralized master data management. The overall objective of this process, however, is to continuously improve the quality of data in the whole spectrum of the company's business operations.

High quality master data is the critical foundation of efficient and trouble-free execution of business processes. Therefore, it is worthwhile to take up the challenge and start working on their unification and consolidation.



Autor:

Aleksandra Rutkowska  
BCC