



High-Quality Materials Data

THE FOUNDATION OF INTELLIGENT BUSINESS



Executive Summary

Maintenance, repair and operations (MRO) is never easy, but is significantly improved by having the right spare parts. Indeed, having the right parts in the right place at the right time is key to business excellence. Consistent and correct materials data informs better insights and feeds analytics, enabling the business to make good decisions and run more effectively. A key prerequisite to managing MRO efficiently is to get the data clean and keep it clean.

When plant engineers and technicians cannot find needed MRO spares or are faced with long lead times for replacements, MRO becomes frustrating and costly. Companies may even have the spare parts in stock, but crews cannot locate them because the descriptive data is poor or the wrong part number has been entered. Meanwhile, senior management is waiting impatiently to get the plant back to operational status.

Enterprise-critical management systems are designed to capture maintenance activities, but they rarely provide well-structured, searchable descriptions of spare parts. Yet the need for clean materials data goes beyond MRO. Having high-quality data gives procurement teams more control. They can generate key reports that enable them to properly leverage and aggregate their buying power.

One situation that typically produces unclear spare parts data is a merger of two companies. A key justification behind the merger may be the consolidation of operational processes. However, if both companies have poorly structured data, consolidation will not be simple.

Similarly, an enterprise system upgrade offers an excellent opportunity to improve master data, but all too often, companies fail to do this. Instead, they push old, poor-quality legacy data into new systems ("lift and shift"). They have insufficient time and budget to complete more than an extract-transform load (ETL) project with a perfunctory effort to clean their data. Thus, companies have the same business-as-usual (BAU) problems in managing spare parts data, which undermines the investment in their enterprise system.

Organizations that invest in data management systems for spare parts and materials find that the payback is big and quick when the project is done right. Indeed, the prerequisite data cleansing project, also called data cleaning, is often the first place where companies go wrong. Implementing and maintaining materials data management can be a significant, resource-draining endeavor, so it is best to find a qualified, trusted partner to support the process.

This white paper explains the challenges around managing spare parts and materials master data. It also details relevant concepts in connection with data cleansing. Most importantly, it identifies key strategies that enable companies to prepare for and carry out data cleansing projects and outlines governance processes to make sure MRO data stays clean.

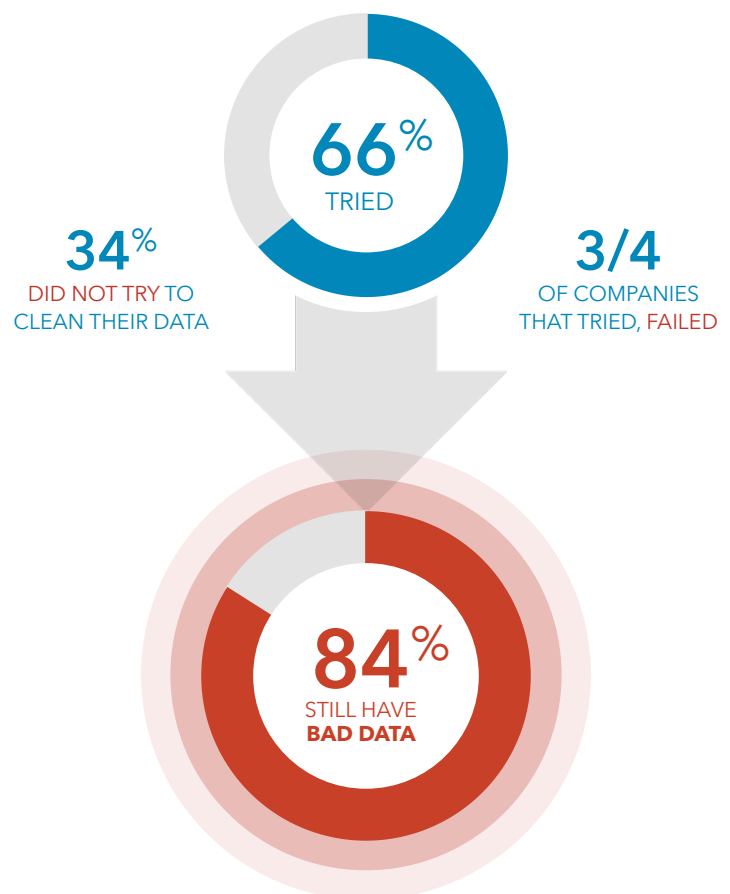


Where Companies Go Wrong

According to Ventana Research, as many as two-thirds of companies have tried to clean their data and three-fourths of those companies have failed. Add the one-third that have not tried to clean their data, and we end up with 84% of companies working with bad data. Only 16% have improved their data.

Time is money. The longer data is dirty, the longer companies go without reaping the benefits of clean data. In other words, waiting is both inefficient and expensive. Companies give considerable focus to implementing IT systems. Unfortunately, they may only think about the data that goes into such systems at a late stage, often after go-live, when trust in the new system begins to erode.

Getting the right data into the system is fundamental and defines how enterprise resource planning (ERP) investments will perform. Data migration plans must include time for data cleansing to help ensure high returns from their ERP investments. Data migration is a journey, not an event. Successful data cleansing (or cleaning) and implementing a strong, effective governance process takes time. Proven strategies and solutions can help companies succeed.



Getting Ready for Data Cleansing

Companies that are planning to clean their materials data have many factors to consider. They are advised to appoint an experienced project manager who is vested with the authority to co-ordinate activities across the organization. Additionally, organizations need a robust business case that promises rapid returns; guidance for decision-making; and protection for the project should priorities and personnel change.

Involving the Relevant People and Functions

The investment in data cleansing must be managed properly. Many downstream business processes will use materials data, so it is important to understand who the stakeholders are. In this way, companies can ensure that they have a comprehensive, clean data set that is fit for purpose and business-ready.

For spare parts, this typically involves the following people and functions:

- Engineering
- Production
- Inventory and storage
- Procurement
- Compliance
- Accounting
- Import and export control
- Material and commodity managers
- Maintenance planners and schedulers
- Maintenance technicians

Each function has its own use case in focus. Whereas maintenance technicians may be interested in detailed item characteristics, procurement may only want to assign a purchase code and spend classification. Accounting may need to assess the parts for tax purposes. Unless all parties are engaged in the process, opportunities for efficiency will be missed.





Understanding and Defining Outcomes

The cost of the project depends on the volume of data that needs to be cleaned, as well as how broad and how deep the cleaning will be. Project and data managers should understand which outcomes the stakeholders require. This helps them define the following:

- **Data required for successful execution of business processes**
- **Data standards and rules needed**
- **Data organization and workflows required to support the project**
- **Data governance needed during daily operations (i.e., how the data quality will be managed and maintained)**

Volume

Reducing the volume of data that needs to be cleaned saves money and can be achieved in various ways. Before cleaning materials data, it is usually worthwhile to exclude some items from the project. For instance, stock keeping units (SKUs) that are currently not in stock and which have not been purchased for several years are typically omitted.

On the other hand, it may make sense to clean the data for a plant that is closing. Active plants can then find relevant spares from the deactivated facility, saving the cost of purchasing new parts. Additionally, the “per line” fee, administrative costs, hidden costs and potential risks all contribute to the return on investment (ROI) of a data cleansing project.

Breadth

Many data cleansing projects for materials and spare parts focus on sorting according to descriptive data, but other identifiers should be included. Certainly, the manufacturer’s name and part numbers are essential. Purchased units and their date of issue, as well as customs and spend classifications, should also be considered. Broadening the data to include the bill of materials (BOM) relationships is useful, as equipment data is often wrongly contained in the spares’ descriptions. The BOM is an important link for plant engineers when they are searching data and setting inventory levels.

Depth

Most data cleansing vendors apply a price per SKU according to the level or depth of the cleaning that will be done. The terms used may vary, but the essential levels are:

1. Classify to a standardized coding scheme.

The United Nations Standard Products and Services Code (UNSPSC), an internationally recognized classification system, is appropriate for all MRO parts data. Typically, a noun and modifier are delivered, for example BEARING or ROLLER, along with their appropriate spend classifications. However, this level of data cleaning is inadequate for most engineering applications or for competitive sourcing.

2. Structure / normalize / standardize.

This level of cleaning reorganizes existing unstructured data into the correct attribute fields according to a pre-defined technical dictionary. This is appropriate where data is already or partially complete and the aim is to have a normalized set across multiple plants and systems. The outcome is divided into data subsets: data that is fit for purpose; items identified as potential duplicates; and parts data that needs further treatment.

3. Enhance / research / enrich.

When cleaning existing parts data is insufficient, additional research can be based on the manufacturers' or suppliers' names and part numbers. If the quality of the legacy data is questionable, companies may have to validate such data separately.

4. Final duplicate detection.

Once the data is cleansed, enriched and standardized, it can then be re-checked for duplicates based on the exact manufacturer name and part number and/or exact matches of specific characteristics or attributes.

5. Walk-down / physical verification.

Walk-downs may be needed when the original data is so poor it cannot be adequately cleaned. This might be necessary, for example, when research cannot be completed due to a lack of part numbers or the information available via research is insufficient. A walk-down is most efficiently achieved by staff positioned at a facility and enabled with digital technology. Companies often contract specialists when the data volume is significant and time is critical.

Working with Solution Providers

Many service companies attempt to perform data cleansing. However, content factories may not have the required levels of quality, service capabilities, expertise, automation and speed. Critically, they may not have sufficient control of project costs and warranties.

Instead of allocating resources to a one-off, non-core project, the best approach may be to employ a solution provider that delivers tried-and-tested software, project management and data cleansing services. Such specialists have done the groundwork of selecting, training and building relationships with premier content partners. In addition, these providers relieve their customers of considerable project management time, provide quality assurance and ensure a much more predictable, reliable outcome.

Choosing the Right Tool for the Job

The data structures for defining material items are more complex than those used for traditional data identification. Moreover, the functionality of some master data management (MDM) solutions for materials must be configured and developed to transform data into meaningful information. A data-cleansing tool for materials data must combine several components, which we outline below.

Cataloguing Capabilities

The catalogue capability must support a large volume of part numbers as well as the inter-relationships between part manufacturers, original equipment manufacturers, vendors and distributors. Its structure must be able to handle the various relationships within a specific material item, such as drawing numbers, supersession, obsolescence and old versions of part numbers. It must be able to capture the relationship of the part to the machine it is fitted to, as well as the location of those machines. Finally, it must recognize the many-to-many relationships between plants, between disparate ERP systems and across the entire company.

Technical Dictionary

The data cleansing solution should include a technical dictionary that has been built up over time and that can act as the basis for data cleaning projects. The solution provider delivers the tools and experience to guide companies in creating their own specialized areas. The key is understanding how the dictionary will be used within the cleaning and governance applications. If the project involves international dimensions, the technical dictionary should include multi-language features.

Languages

In addition to providing multi-language features for the technical dictionary and all its components, a comprehensive solution includes multiple languages for the software user experience. It is also able to translate data from and to the languages required.

Efficiency

Even with a high level of automated data cleansing, such projects still involve manual work, so the productivity of the system is important. Beware of fully automated or full AI-only approaches. Some elements of data structuring and organization can be automated but must be backed up by manual checks and confirmation. Matching data terms to pre-existing databases is also worth considering; however, as some material is copyrighted, spares suppliers are advised to manage this directly.

Process Management

Both data cleansing and governance will only be successful if the chosen solution incorporates strong process controls. Preferred applications offer the ability to group data fields and to control the rights to editing and authorization according to an individual's skill set and responsibility.

Quality Process and Audit Capabilities

Within a data cleansing project, users must be able to maintain an accurate record of the work undertaken to ensure accountability. Quality control processes must be embedded into the application. This ensures a high level of quality and should be tracked as the project progresses. Additionally, service-level tracking of progression, quality levels, resources expended, work remaining, tracking to schedule and other KPIs should be incorporated.

Maintaining Clean Data Through Good Governance

Step forward in time. The company has employed the best services partner and used the right data cleansing application to deliver a set of well-organized, clean materials data. Now, how can the organization maintain all that information and make sure that the data does not become corrupted, making it necessary to start all over again?

This is why it is crucial to put the right governance process in place.

Understanding current processes and defining what needs to be controlled are important steps. However, defining an entirely custom process requires expensive development and implementation. The better way is to find a provider that can map an existing master data management (MDM) solution to the company's existing required MRO processes through simple configuration.

The chosen MDM for MRO solution must fulfill four key functional requirements:

1. Nomenclature

Create a single item, internationally and across multiple languages. Deal with the complex workflow and approval processes required by the end users of materials, where inaccuracy can be costly.

2. Modification

Control the entire creation and modification process, from the initial request for a new master item originating from the factory floor to the addition of the item to various enterprise systems.

3. Validation

Ensure that parts are not duplicates, record the descriptive information consistently and add all the other data associated with materials such as accounting codes and logistics information. Monitor this process.

4. Flexibility

Adapt to multiple enterprise management systems and to the different fields in each application. Make sure descriptions are optimized to use the space available in each system.

An off-the-shelf MDM for MRO application with these capabilities will save time and effort, allowing companies to focus on organizational changes and the staff management issues that accompany the implementation of a centrally controlled data hub. In time, they will be able to exploit the significant benefits that become possible through clean data.

Boosting Efficiency, Analytics and Insights

Spare parts data cleansing and governance projects are not easy to get right. But they are worth it, as clean data lays the foundation for better business operations.

Among other benefits, having clean materials master data for MRO opens opportunities for improved procurement and supply chain efficiencies and increased plant reliability. In addition, accurate insights and analytics enable inventory and warehousing optimization. Much-improved plant maintenance also yields increases in production uptime, which in turn lead to higher reliability and resilience.

Are you ready to learn more?

Discover Sphera's MDM for MRO solution.

About Sphera

Sphera is the leading provider of environmental, social and governance (ESG) performance and risk management software, data and consulting services focusing on Environment, Health, Safety & Sustainability (EHS&S), Operational Risk Management (ORM), Product Stewardship and Supply Chain Risk Management (SCRM).

www.sphera.com

For more information contact us at:
sphera.com/contact-us

©2023 Sphera. All Rights Reserved.