Data Management for Energy Industry – Ideas for improved efficiencies

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During the wave of enterprise resource planning (ERP) implementations a decade ago, many companies failed to standardize data during new ERP implementations or subsequent company acquisitions, and simply put existing data into the new system. In addition, data standards and processes were not established, and hundreds or thousands of users were given access to create master data. This failure to focus on master data management (MDM) left a significant amount of inconsistent, incomplete, and incorrect data to accumulate over time. Bad data can be particularly problematic for energy companies, where incomplete, inconsistent, and duplicate data in such areas as inventory and vendor records can prevent companies from locating spare parts, analysing spend, and enforcing contracts.

Many energy companies attempted to "cleanse" their master data in order to resolve the business issues that the bad data is causing. Nonetheless, some companies have been unsuccessful in their cleansing efforts or have had results that did not meet expectations. Multiple ineffective data cleansing initiatives have strained budgets and resources while providing few tangible benefits. Companies have treated MDM as a one-time data cleansing exercise and a pure technology play. MDM is a much broader concept used to significantly reduce data inconsistency by establishing processes and tools required to create and maintain uniform, sustainable, and accurate lists of master data. Companies in other industries such as retail, where providing accurate and easy-to-access product data to consumers in real time is a core competency and a competitive advantage, often focus more time and resources on MDM and have developed many leading practices. However, the energy industry's historical lack of focus on MDM has resulted in a multitude of data related issues today, including the inability to locate accurate and consistent transactional data, excessive inventory, contract noncompliance, and increased costs.

This publication will provide project sponsors, energy IT and supply chain professionals with steps to structure and execute a more effective and long-term MDM program and data cleansing process for energy companies. It will discuss initial considerations and expectations, the importance of change management, service provider, client responsibilities, technology, and the necessity of an organization-wide commitment to quality.

Common MDM and data cleansing problems

A lack of standards governing master data records can produce poor quality and duplicate data. The issue may be further complicated when data resides in or is shared among multiple systems. Difficulties in retrieving reliable master data can result in inefficiencies in transactional, analytical, and reporting processes. These factors can produce unreliable business. Information, leading to inaccurate or suboptimal decisions and missed opportunities for cost savings and improved efficiencies.

Despite the compelling business case for MDM, data cleansing projects often fail to deliver intended results. Several factors may contribute to project failures, including considering this endeavor as a one-time initiative and not an ongoing effort, pursuing a one size fits all solution that can be deployed overnight hence underestimating resource requirements, using ill-suited technology, and not implementing rigorous project management, ongoing governance and maintenance. In addition, a lack of company-wide strategic process development and ineffective change management can be obstacles to a successful data cleansing and MDM implementation. However, there are several steps a company can take to improve this process.

Develop an Information Management System

To understand what data should be considered for MDM, an organization should undertake the development of an information strategy. This strategy identifies required key data needed by the organization or a particular business unit, and includes a model of the required data along with any hierarchy or interdependencies. In addition, to help understand data needs and to identify any duplicity or redundancy, standard definitions of each data component should be established to provide a clear and consistent reference to all of the data elements. This definition activity should include the documentation of any calculations or other methods used for derived information in the model. The information management strategy not only provides a consistent reference model but also standardized terminology that can then be used across the organization and subsequent efforts related to information and master data management.

Implement an Effective MDM Governance Model and Ongoing Monitoring Process

Companies should implement an effective governance model and ongoing monitoring process that will enforce master data quality going forward. This governance model must include the components of organization, process, and KPIs:

Organization: The MDM organization should include data owners who approve changes to data and standards; a data manager who manages the daily data processes and monitors key performance indicators (KPIs); and data stewards who execute the daily data processes. Some companies might choose to appoint a chief data officer with ultimate accountability for data quality.

Process: Key processes to implement include master data additions and changes; data structure additions and changes; and reporting. In addition, processes should be defined to manage trouble tickets for the MDM tool as well as processes for regular monitoring of data to identify data issues or inconsistencies.

KPIs: Key performance indicators should measure both the efficiency of data quality processes (e.g., cycle time to create records), and the effectiveness of data quality processes (e.g., percentage of records without all fields completed). Other KPIs may be indirectly related to master data but signal poor quality data or long master data processing times.

Select a tool that can enable both up-front data cleansing and ongoing MDM

There are two general uses for master data technology during an MDM initiative: technology used to establish standards, facilitate cleansing, and review data quality during the up-front data cleansing; and technology used to enforce data standards and processes and synchronize data between systems on an ongoing basis. While most MDM technologies seem superficially to be a panacea for master data issues, a more critical inspection is required to distinguish between functionality that can promote data cleansing efforts and functionality that can hinder them.

Data cleansing tools may feature several functions, including capabilities for initial scanning, classifying data, mapping attributes, and identifying anomalies. Although some human classification and validation will always be required, companies should look for technology that allows for significant automation of these functions as opposed to full manual classification. Some cleansing providers will be willing to cleanse a small sample set of data to demonstrate their capabilities; those with significant automation in their process tend to respond

more favorably to these requests than those that rely more on a manual process.

Some key questions related to data cleansing that the project management team should ask about the MDM tool include:

- Will the company have direct access to the cleansing tool or is it used strictly by the cleansers?
- How much of the total cleansing and review process is done through the tool versus exporting the data outside the tool for cleansing?
- What workflow and status capabilities exist in the tool to manage the cleansing process?
- What type of reporting is available to provide visibility to the cleansing process?
- Is the same tool or version of the tool, used for cleansing and for ongoing data maintenance? If not, what are the key differences in capabilities between the versions and what is involved in data migration between the cleansing and ongoing maintenance versions?

For ongoing data maintenance, MDM tools typically feature capabilities for synchronizing data among disparate systems, enforcing data standards, and enabling workflow. User experience should be of utmost importance in selecting an MDM tool, as this tool will be a key point of interaction with end users and, thus, critical to end-user adoption. An MDM tool vendor should be able to demonstrate its standard tool capabilities and allow access to an environment in which companies can experiment with the user interface.

Some key questions the project management team should ask about the MDM tool as ongoing data maintenance include:

- What workflow capabilities are available for the routing and approval of new master data requests?
- What transactional systems has the MDM tool integrated with in the past?
- Does the tool utilize standard application programming interfaces (APIs) to the needed target environments or will custom interfaces need to be developed?
- What master data domains (e.g., vendor, customer, material) can the tool manage and support?
- What vendor clients can they reference with a similar technology landscape?

Secure the right level of involvement from dedicated resources, stakeholders, and executive sponsors

Before beginning an MDM project, companies should understand the complexity of data cleansing and the time and effort it requires. Underestimating internal resource requirements is a key point of failure in many MDM projects. Companies should commit key stakeholders from all areas of the organization that create, maintain, or utilize the master data. These resources should be available throughout the full project lifecycle. Executive sponsorship and endorsement of the initiative is also critical in securing and maintaining involvement from these stakeholders.

The internal team involved in an MDM initiative should consist of three major groups:

Dedicated project team members – The success of comprehensive MDM projects is highly dependent on the pull of resources assigned to it. Companies should dedicate competent and committed employees that have knowledge of the master data domain (i.e., items, vendors) and have a stake in the ultimate
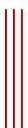
outcome of the data and processes. These employees should also be empowered to make decisions.

Extended stakeholders – Companies should secure staff members who have subject matter experience in designing standards, reviewing cleansed data, and providing ongoing support. These staff members should also have knowledge of their specific data and the associated business processes. Auxiliary stakeholders that may be impacted by data changes, such as accounting, tax, and human resources, should be kept informed and involved on an as-needed basis to evaluate the data and process impacts throughout the project and to assist in addressing issues.

Executive sponsor(s) – An executive sponsor with an understanding of the key drivers and benefits of the MDM project and a belief in the value of the results should be actively involved in endorsing the initiative. Executives and upper management should communicate this support regularly through multiple dissemination channels, including verbally in both small and large group settings. Executives should also ensure that all levels and functional areas of the organization agree to comply with the future MDM process.

Clearly define expectations and responsibilities with selected service providers

For a large-scale MDM project, companies often engage two external service providers: a firm to manage the project and focus on process, governance, and strategy; and a firm with specialized data cleansing resources and domain expertise. There are several questions the project management team should ask when selecting a data cleansing service provider: Do they have experience in the industry and target data domain? Do they have preset cleansing standards or are they flexible enough to adapt to a standard the company wants to use or define?

In reviewing potential firms for managing an MDM project, the project management team should consider some of the following points related to the team and the data visibility: Does the cleansing vendor's staff have experience in your industry or with your key suppliers? Is there a tool that allows visibility to the data as it is moved during the cleansing process? Is reporting available?

Data cleansing is a collaborative and interactive effort. Project team resources and stakeholders should review data as it is cleansed and provide timely, detailed feedback to the cleansing service provider. Likewise, the cleansing service provider must be clear about any additional information, clarification, or research that they expect the client to provide.

Before beginning the cleansing endeavor, the project management team should work with their cleansing service provider to evaluate and determine the degree of cleansing to be performed as well as any segmentation within the data. The project management team should consider several questions that can impact not only the ultimate data quality but also the timelines and resources required. Should the cleansing provider populate the new data records with pre-existing data only or will additional research be required to populate the records? Are there certain key records, such as inventory items or strategic vendors that must be cleansed to a level different than others? Is the data cleansing service provider expected to normalize domain values within a set (e.g., correcting misspellings)?

Overall, the project management team should remember that they are working together with the cleansing service provider to accomplish the goal of quality data. Companies should have clear definitions of roles and responsibilities on both the vendor and client side, including project management and change management. Ambiguity around roles can lead to misunderstandings, dropped tasks, and conflicts, which can derail or significantly hamper the success of a project.

Focus on Change Management for both Short and Long Terms

Change management is a critical focus for any MDM initiative, as MDM projects entail drastic cultural changes across the organization in the way data is treated and used. Further, data transformation and data processes can be difficult to comprehend and require extensive education to inform stakeholders and receive their approval.

Companies should promote a shift in the way their employees and leadership view master data. Viewing data as a corporate asset, worthy of the investment of time and resources, rather than as an afterthought, can help reveal the opportunities and business benefits that high-quality and reliable data can provide. These benefits can include fewer regulatory noncompliance fines, more accurate tax liability calculations, better price negotiations, lower inventories, and reduced inventory shrinkage. In applying basic asset management principles to master data, the project management team can build a compelling business case for the data cleansing project. Senior executives should communicate this message frequently and consistently throughout the company.

While the shift to treating data as an asset provides the foundation for organizational change in MDM, executives should understand that this type of change requires commitment. Executives should gain buy-in and sponsorship from all business areas that are stakeholders in the data or in the technology. Further, the MDM project management team should help educate end-users on data and process impacts and assist end-users with understanding both the importance of their role in the process as well as how MDM can benefit them individually. At the same time, the MDM team should not exaggerate the immediate impact of the MDM tool and the cleansed data. Data cleansing is a process of continuous data improvement that will go beyond the initial effort. Unrealistic expectations from the data cleansing project can severely impact satisfaction with the results.

Conclusion

A more effective data cleansing process and a long-term MDM program can help energy companies avoid data issues that can result in poor business decisions. The steps outlined in this article can help energy companies improve their data cleansing efforts, and realize and sustain the business benefits that high quality and reliable data can promote. JD Soft, with its expertise in data management can help add business value and streamline the decision making process for better business results.

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