

Master Data Management: Towards Simplification and Alignment

Summary

Data Economy is as vast as the digital world, but deep down at core it is executed by Data Management. Discussions with DM leaders from various industries reveal the pivotal role of Master Data Management (MDM) to make or break the success of any data and information intensive operations – basically advocating most organisations today. Insights from discussions with DM leaders sheds light to high operational risks, as well as possibilities for higher financial gains.

Regardless of sector, the key themes among data management professionals are the same revealing common paradoxes and root cause level issues. While securing attention and budgets for MDM initiatives seems no longer a typical issue, the lack of data expertise and levelled participation from all parts of the organisation often derails progress and may have significant bottom line impact. Data Management is also a constant balancing act between centrally governed, strict rule-based function and the change management towards data and AI literacy and sustainable data and information (D&I) quality practices.

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beyond the obvious

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The Complexity Conundrum

Master Data Management (MDM) plays a crucial custodial role—one that is further reinforced by the company’s position in the value chain. MDM functions today seem hovering between random self-services with tens of thousands of power BI dashboards and centralized, strict access-management based systems across domains. Further, companies may be exposed to oversized software solutions ending up catering the loudest voices, even individual needs, rather than the organization’s core needs. This fragmentation leads to inefficiencies, increased costs, longer project timelines, and stagnant processes.

One potential answer lies in designing agile systems and processes that balance centralized governance with localized autonomy. To support business units and teams’ data management, data governance and MDM actions, one successful approach has been to recognise and apply new organisational roles and strengthen existing ones. In one example a new role was introduced to solely keep the master data consistent to ensure that the meaning of the data across the entire organisation would be explicitly same for all. Roles to recognize and introduce new levels of focus to data quality, standardising terms, semantics, and consistency in data models have all proven to be valuable and collectively constructive.

Simplification and alignment may also require a new mindset on the way towards data centric organisation. The following three roles are practically needed for data assets cultivation towards internal and external utilisation and consumption (Figure 1). The first, and most important role is one of Subject Matter Expert; left shifting or at least complimenting the centralised data management through close collaboration with subject matter expertise. It is important to identify the organisational roles, where data is produced and profoundly understood in terms of its deficits, actual and potential information value and purpose. The roles where this type of knowledge is typically best captured may be in practice Product Manager, Designer, Solution Owner, etc.

The second role in this “data-super-team” are the Data Architects to define and communicate the correct use of databases, repositories, master data and so on. The third role is Data Scientists. This is least critical and typically needed for data that requires higher degree of processing.

Sustainable and full utilisation of the data and information assets requires a role in charge. This may naturally fall to Data Architects or similar roles to ensure full visibility, understanding and compliance with business and operational processes as actual environments where data is being extracted from, models applied to, AI agents embedded, target leakages mitigated.

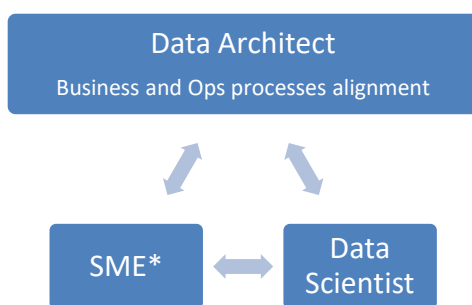


Figure 1: The three roles needed for data sense making.

¹ * Subject Matter Expert

Data Awareness and Literacy: The Missing Links

The lack of data literacy and awareness continues to undermine Data Management and MDM efforts. Many organizations struggle to establish consistent logic in data modelling and the rise of self-service BI tools has added layers of complexity to the data landscape. Tools like Power BI are often used for individual preferences in data visualization and logic – fostering dangerous inconsistencies for example to management reports based on different data interpretations and definitions.

In dealing with the **Tens-of-thousands-PowerBI -dashboards -dilemma**, I introduce four practical approaches for damage control and mitigation:

1. Limit the use of Power BI's to visualisation while the underlying data is kept consistent, correct, and complete by Data Management control practices for e.g. access rights and profiling.
2. Set-up Data Vaults with e.g. reporting rules and procedure to adhere to.
In this approach the system logic is the data set, not the Power BI report. In other words, this approach prevents the need to repeatedly rebuild the logic in every Power BI report or rely on copying it from other teams – both of which can lead to problems.
3. Other approach to control the use of Power BI's is to produce and process the data models close to data sources
4. Lastly, we come to the most important area of data management – internal structures for collaboration and the human side: create internal knowledge partners instead of having everyone creating their own data universes.

Reconsider, repurpose and redefine the data autonomy and self-services

Once we have the dashboards under control, they need to convey insightful data. But where do the insights come from, how to align the different insights and where to draw the line to allow all voices to be heard. Depending on the company culture and the level of autonomy exercised, forming one team for insights gathering can help to regain control and support the data quality initiatives to succeed. But again, this is not a case of simple truth. Consider industries exposed to local, for example, physical or legislative conditions – for instance telecom site in central Africa v. in dense urban environment, a farmer in South-East Asia v. in Finland – for any market and local conditions insights the headquarters may require, the local offices will always know better. The centralised data management can only provide product and operational core data, there's always the need to find the balance and harmonise the data between the global and local functions.

Another matter is the inaccurately substantiated and validated reporting. Apart from obvious implications, these are serious cases because they can lead to cultural bias and to misleading internal company realities which do not adhere to the company values, rules and targets.

“We can do all the reports but they won't find what they want from it”

One key question the data managers often encounter when serving their internal customer is what they need the data for. How can DM and MDM best support with data the business to achieve its goals, e.g. increase sales, decrease stocks. Working from right to left may reveal the actual and specific data needs when “9/10 managers don't even know what they want to see, what data they need”

One solution to bridge the gap on data literacy shortcomings is applying “internal data productization” approach, where raw data is transformed into information and hence more valuable, context-rich internal “product passports” or “product data cards”. The underlying idea is

to clean, process and enrich data to information that all can use. But also this approach requires accountability. If the baseline, e.g. SAP² data is in good shape and can remain intact, the operational costs to centrally produce condensed, information rich internal dashboard views of company portfolio items, will likely be feasible also long term. But this entitles strict, central MDM approach to access management to prevent uncontrolled forking of the SAP data by different types of roles in the company. Among main actions towards data quality is the mitigation of the risks of the personnel to tamper with the central databases.

Data logic must reside at the source, ensuring that reports reflect consistent, accurate, and complete information. Furthermore, fostering "data citizens" through training and awareness programs can empower employees to navigate and utilize data effectively.

AI Adoption: Risks and Rewards

Overlooking data quality and loose, internal access rights is a massive risk in AI adoption. While AI promises transformative potential, its adoption is fraught with challenges, particularly around data quality. In all discussions companies stressed the importance of foundational measures – controlled AI engineering, safeguarded data sources, standardization, and alignment of AI initiatives with clear business objectives. It is also evident that there's high demand for practical and thorough guidance of AI for MDM in general and for different usage profiles. A hindering detail for AI adoption is also the fact that many companies cannot freely extract their data from their cloud-based systems due to Cloud providers pricing and delivery models.

In one case the company critical business figures were known to be wrong, but "correcting it takes too long and is too complex". This is known to be the tip of the iceberg but overlooking flawed data due to other priorities and lack of sufficient DM / MDM resourcing will hinder the safe and sustainable move towards AI. Pre-requisite for AI technologies utilisation is the ability to produce production-grade data across the organisation. This requires standardised data models, ideally based on industry level definitions and agreements.

Aligning Data Management with Business Goals

DM's ultimate purpose is to support business goals, whether increasing sales, reducing inventory, or improving time-to-market. However, many organizations adopt a reactive approach, relying on tools rather than proactive strategies.



"We invested 4.3€ million in a tool, only to become slower in operations because teams are now waiting for the tool to make decisions. They became passive and reactive instead of maintaining the proactive and anticipatory attitude. Tools are not solving the problems; you need people and processes in place"

² Systems, Applications, and Products in Data Processing

Another perspective on alignment highlights the importance of data management keeping pace with the speed and agility of the business functions it supports. While ETL is commonly used in data development, it can extend project timelines and struggle to meet the rapidly evolving demands of data analytics.

DM is typically an overhead, not profit/loss function. This underscores the need for a cultural shift toward accountability, collaboration, and anticipatory action also within the data management practices. Typical Key Performance Indicators (KPI's) DM can help to support are time-to-x as well as profit and margin related indicators. In fact, most KPI's are actually linked to data management, but the DM notion is too often to fly under the radar. "If all goes well, we're not noticed". This overlooks the fact that data management today oversees what is increasingly the most valuable asset within organizations – their data and information wealth

Data quality is essential, yet its significance is often misunderstood or undervalued. In typical scenario when DM proposes investing in a data quality enhancement tool, its direct impact on revenue is questioned: "How will this help us sell more?" Without a clear connection to immediate sales outcomes, the investments are often not realised. Raising and building awareness about the value of clean, actionable data is critical. This can be done by e.g. utilising Digital twins to reveal data flow causalities and dependencies or another example, Building Information Modelling (BIM) opened and synergised down and upstream to help to visualize and address inefficiencies. In one large international organisation these issues have been addressed by Data Quality Management. According to their own estimation 70% of Data Quality Manager's job is working on data literacy.

Key considerations for MDM Success

1. **Simplify and Centralize:** Reduce complexity by consolidating data systems and creating consistent data models at the source.
2. **Prioritize Data Literacy:** Invest in training programs to ensure employees understand the role and impact of data in decision-making.
3. **Focus on Quality:** Make data quality a foundational, uncompromised priority e.g. for safe AI adoption.
4. **Balance Autonomy and Governance:** Harmonize centralized MDM practices with localized flexibility to address and incorporate also the local market insights
5. **Align with Business Strategy:** Work backward from business objectives to define MDM priorities, ensuring every initiative drives tangible outcomes.

The Path Forward

Data Management, inspite of its heavy IT legacy, is not just a technical endeavour; it is business process, operational, cultural and strategic imperative. Success requires a combination of simplified processes, robust, centralised governance before the cross organisational data and AI literacy kicks-in, as well as deep, incorporated understanding of business goals. The road to effective MDM is long, but the rewards – new D&I based revenues, safe and sustainable AI utilisation, increased transparency for better informed decisions – are worth the effort.

Transform data from an operational burden into a strategic asset.

About the research

The research was carried out as discussions during P2-P11.2024 with 11 midsize and large private sector companies representing 5 different sectors and global reach. All companies have own production or equivalent function, and large distribution for B2B and / or B2C segments. Participants represent middle, upper or executive level of management with Data Management accountability. The research was conducted as white label approach due to the sensitive nature of organisational matters discussed.

Author

Riina Luoma has 30 years of experience of technology sector, B2B professional services and data infrastructures in platform and cloud-based businesses through various roles. A recipient of both the Nokia Quality Award and the Nokia Innovation Award, she has steered analytics solutions development, data strategies and data ecosystems development. She was recently selected to Nordic 100 in Data, Analytics and AI list and is currently working at VTT as Team Leader for Data Intensive Economy RDI.

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