In response to changing business needs and technologies, MDM is evolving. Data and analytics leaders who modernize their MDM programs by following MDM best practices while integrating capabilities and insights from augmented data management solutions are best positioned to meet stakeholder needs.

Overview

Key Findings
- Business needs are rapidly evolving, and the benefits of MDM are being demanded across a wider array of data, processes and operating entities than ever before.
- Advances in technology are allowing for increased automation and scale in the governance and management of both enterprise and master data.
- Data and analytics leaders who optimize their MDM strategies by integrating insights and capabilities from augmented data management solutions, while also focusing on MDM best practices, are best positioned to meet evolving business needs.
- MDM capabilities will gradually be integrated into broader data and analytics governance platforms as vendors increasingly offer solutions with a convergence of data management capabilities in a single offering.

Recommendations

Data and analytics leaders seeking to optimize stakeholder value through the implementation of a more modern approach to MDM must:

- Avoid the temptation to assume new technologies alone will allow your MDM program to meet evolving stakeholder needs. A foundation of MDM best practices rooted in the delivery of stakeholder value remains critical.
Strategic Planning Assumptions

- By 2025, 50% of CDOs will achieve digital acceleration goals using augmented data management practices across MDM, data hubs, data quality and integration.

- By 2025, 50% of data and analytics leaders will leverage augmented MDM and active metadata to automate governance policies for master data models, hierarchies and definitions.

Introduction

Drastic increases in data volumes and a business focus on digital transformation are forcing businesses to modernize their MDM programs. Companies evolving to meet changing needs recognize MDM as a business imperative and competitive differentiator. In response, technology providers have delivered innovations that provide MDM benefits at scales previously unattainable. Together, the forces of changing business needs and new technologies are reshaping MDM.

While MDM technology evolves, old habits die hard. Insufficient focus on best practices ensures MDM remains a challenge for many organizations, and treating technology as a panacea worsens the problem. Companies focusing on MDM best practices while also integrating capabilities from augmented data management solutions — particularly data quality and active metadata management — are best positioned for MDM program success.
Description

The technology most influencing the evolution of MDM solutions is augmented data management (see Hype Cycle for Data and Analytics Governance and MDM). This includes the use of AI, graph and similar technologies to reduce constraints imposed on MDM programs by legacy technologies and human-driven governance processes. These technologies provide for greater scale around core MDM processes such as using machine learning to improve speed and effectiveness of entity resolution, and they help automate governance processes by using active metadata to inform its classification and management. As these innovations affect MDM, they also affect data quality, data integration and active metadata management (see Market Guide for Active Metadata Management).

These technologies are a response to businesses demanding MDM insights from a greater volume and diversity of data than ever before. MDM stakeholder needs across the digital realm, particularly in support of customer and product experiences, require data and analytics leaders to modernize their MDM programs for peak efficiency and scale.

When successfully executed, a combination of forward-thinking MDM strategies, MDM best practices and new technologies are allowing data and analytics leaders to:

- Improve the trustworthiness and scale of MDM processes by utilizing active metadata to automate the creation and management of master data governance rules, and to rightsize the scope of MDM programs (see The State of Metadata Management: Data Management Solutions Must Become Augmented Metadata Platforms)

- Benefit from the insights and economies of scale that exist when treating master data as a shared asset across corporate boundaries (see Modernize Your MDM Program With External Master Data Sharing)

- Extend the value and insights of MDM programs by utilizing graph and similar technologies to identify previously unknown relationships that may themselves be considered master data (see Graph Steps Onto the Main Stage of Data and Analytics: A Gartner Trend Insight Report)

- Optimize and automate MDM and governance business rules by integrating the insights from augmented data quality solutions (see Augmented Data Quality Represents a New Option for Upscaling Data Quality Capabilities)
These evolutionary market forces will cause a shift in the MDM software market — a shift that has already begun — toward a focus on more integrated solutions that support a data fabric design to integrate a wide array of capabilities across the data management ecosystem (see Figure 1). As such, as of 2022, MDM software will cease to justify its own Gartner Magic Quadrant, and by 2025, Gartner coverage will focus on a new breed of data management solution that integrates all of these new technologies into a cohesive data and analytics governance platform.

**Figure 1. The Evolution of MDM**

- Scale data stewardship processes both through the use of active metadata to identify exceptions and through the use of AI to automatically resolve exceptions.
- Inform and automate MDM-related data integration patterns by utilizing insights from augmented data integration solutions, implementing MDM within an overall data fabric design (see *Data and Analytics Essentials: Data Fabric*).
- Support more adaptive, context-centric forms of data governance (see *Adaptive Data and Analytics Governance to Achieve Digital Business Success*).
Benefits and Uses

Data and analytics leaders who modernize their MDM programs by implementing MDM best practices and insights from augmented data management technologies will drive additional value for their stakeholders in four ways:

- Improved business performance
- Improved decision making and analytical insights
- Reduced business risk
- Improved MDM program scalability and efficiencies

Improved Business Performance

Organizations modernizing their MDM programs by using more operational styles of MDM will realize improved business performance across four key areas:

- Improved business outcomes created with optimized alignment between MDM governance rules and the business processes they support: For example, stakeholders will benefit by having an MDM platform that utilizes active metadata to define a product or customer hierarchy that more accurately describes how that hierarchy is used by stakeholders to drive business value.

- Improved speed and agility of business processes supported by automated and exceptions-based master data management: For example, rather than waiting for a data steward to resolve an exception, MDM processes leveraging insights from a data quality engine could run in real time. Also, the resolution of that exception could vary based on the context of how that data is used and not on its attributes alone.

- Reduced opportunity costs associated with a failure to take action based on insights provided by master data due to a lack of trust or confidence in the data. For example, if the insights created from customer master data suggest an opportunity to improve the customer experience but no action is taken, then both the customer and the company will fail to realize any benefits.
Improved accuracy and “fit for purpose” of master data provided by the combination of human and machine-driven processes, particularly around the use of active metadata to enable more context and use-case-centric data quality definitions: For example, an MDM solution could leverage active metadata to enable use-case-centric entity resolution capabilities, where the match rules for a marketing use case would be different than those used in a finance use case.

### Improved Decision Making and Analytical Insights

Organizations that modernize their MDM programs and that use more analytical styles of MDM will realize improved business performance across four key areas:

- **Improved decision making:** The timeliness, relevancy and improved “fit for purpose” of the analytics provided by modernized MDM programs will significantly improve organizational decision making because the underlying data will be trusted, at scale (see *The Future of Data and Analytics: Reengineering the Decision, 2025*).

- **Optimized business processes that utilize master data insights:** For example, an organization would drive significant value with more complete insights of its total customer experiences. Active metadata can help find business decisions that are using untrusted or ungoverned master data, as an example.

- **Expanded insights across a broader array of use cases, domains and processes:** The efficiency and scale provided by augmented data management solutions would allow for organizations to potentially expand the total number of sources, domains or business processes supported by an MDM program.

- **Extension of MDM insights into the realm of “unknown knowns”:** A historical reliance on human-centered data modeling has limited MDM to provide insights on the realm of “known knowns.” Augmented MDM, particularly graph, allows MDM insights to be extended into “unknown knowns.” For example, an augmented MDM platform could identify a previously unknown relationship between two master data objects — a relationship that itself could be managed as master data.

### Reduced Business Risk

The combination of improved business performance and analytical insights enabled by companies that are enabling more modern forms of MDM will ensure MDM stakeholders are also able to reduce their business risk.

A small sample of these benefits could include:
Improved MDM Program Scalability and Efficiencies

Data and analytics leaders embracing MDM best practices and evolving technologies across the data management spectrum will realize great efficiencies and scalability in their MDM programs.

Examples of some of these benefits include:

- Reduced regulatory risk enabled by having a more complete or accurate view of customer interactions, or through greater visibility on counterparty risks for financial institutions
- Reduced operating risk, such as reduced supply chain risk, by having better visibility into the use of specific materials within a manufacturing process:
  - Improved master data could also be used to highlight fraud, credit or other financial risks.
- Reduced security or related infrastructure risks by having a more complete view of physical assets managed by an MDM program
- Reduced data- or governance-related risks enabled by having more accurate insights on the location or use of specific data assets

The ability to “rightsize” an MDM program by allowing data usage patterns within active metadata to help draw a clear distinction between what is and what is not master data within an organization (see Which Data Is Master Data?)

The potential to expand the scope (and value) of business processes supported by an MDM with the same level of resources:

- This includes the ability to potentially support more digital-facing business processes that may have been previously excluded from an MDM scope due to excessive data volumes.
There are several risks that data and analytics leaders need to consider when planning an MDM program modernization:

- Over time, MDM transitions to become a data and analytics governance program, not a data management project:
  - This will break a longstanding separation between data governance policy management and the management of those policies in MDM software. D&A governance platforms break this separation by helping business leaders set (master data) policy and by helping business users/stewards enforce (master data) policy. As a result, either MDM will expand into other areas, such as application data management, or other governance policymaking programs within the organization will merge with MDM. Organizations will start to see synergy and improved productivity in the application of both D&A governance and MDM.

- Reduced MDM program costs by implementing more automation into legacy human-driven MDM and data governance processes

**Risks**

There are several risks that data and analytics leaders need to consider when planning an MDM program modernization:
1. Insufficient focus will be applied to MDM best practices, and too much focus will be on technology, particularly in these areas:

- Companies will fail to implement a programmatic outcome-driven approach to MDM and will attempt to advance their MDM maturity levels too quickly with a focus on data or technology first. See Create a Master Data Roadmap With Gartner's MDM Maturity Model and Three Essentials for Starting and Supporting Master Data Management.

- Companies will fail to articulate an MDM strategy as a planning domain within an overall data and analytics strategy. See Modernize Your Organization's Data and Analytics Strategy to Achieve Digital Business Success.

- Companies that continue to fail to draw a connection between MDM and quantifiable business outcomes will risk MDM program failure. See How to Measure the Business Value of Master Data Management.

- Companies will seize the opportunity to drastically expand their MDM program scopes, which increases the risk of program execution and the ability to deliver business value in a timely manner. See How Augmented Data Management Capabilities Are Impacting MDM and Data Governance.

- Companies that fail to sufficiently invest in a data governance program will fail to implement more modern approaches to MDM.

2. Cultural or political barriers will enforce the belief that a reliance on machine-driven processes in the MDM domain is tantamount to a loss of control or oversight over those processes. Explainability and audit of governance rules are still required, and if data and analytics leaders are unable to provide traceability around machine-driven processes, they run the risk of losing organizational confidence in them.

3. A widespread embrace of augmented data management capabilities assumes the insights and value provided by machine-supported processes is equal to, or exceeds, the value provided by human-supported processes. Many will challenge this assumption. Data and analytics leaders who cannot quantify those benefits could run the risk of losing stakeholder confidence and/or prolonged MDM program funding.
4. Taking a more integrated approach to data management across the existing spectrum of capabilities (spanning MDM, data quality, data integration and metadata management) will require organizations to adapt new data and analytics operating models. These models may require organizational or process changes, particularly in larger organizations. Companies that do not embrace these new operating models will jeopardize their ability to provide the greatest stakeholder benefit.

The best migration strategy across all of these risks is to follow MDM and data governance best practices. There has never been any “silver bullet” when it comes to MDM. As much as the discipline is evolving, the recipe for MDM program success through a rigorous application of best practices — as articulated in the Gartner MDM Operating Model (see Figure 2) — remains the same.

**Figure 2. Gartner’s MDM Operating Model**

![Gartner’s MDM Operating Model](image-url)
Recommendations

Gartner recommends that companies seeking to modernize their MDM programs through a combination of a forward-thinking MDM strategy, MDM best practices and advances in MDM technology focus on the following:

- Advance MDM programs by applying augmented MDM and data management capabilities to MDM best practices across your MDM strategy and operating model. These best practices include:
  - Rightsize the MDM program scope by using the insights from active metadata and augmented data quality solutions to determine master data definitions and attributes.
  - Utilize insights from active metadata to inform and improve MDM operating and business metrics, and to measure overall program value.
  - Use the contextual insights provided by augmented MDM technologies to better support adaptive data governance models.
  - Use the insights from augmented data management solutions to improve the business processes supported by MDM.

- Communicate how the increased reliance on automation in the MDM program is supporting the business case to both IT and business stakeholders.

- Seek opportunities to implement external data sharing (see Modernize Your MDM Program with External Master Data Sharing).

- Seek technologies that best support evolving market needs by using solutions that allow for augmented MDM, data governance, quality and integration capabilities to be leveraged seamlessly across data management use cases.

Evidence

The evidence supporting the viewpoints in this research is a function of:

- Thousands of Gartner client inquiries related to MDM (and related) best practices and market trends
- Ongoing and consistent interactions with MDM and related software vendors on their perspectives related to the MDM market and trends
Gartner analyst insights gleaned over decades of MDM experience as practitioners, consultants and researchers

Gartner client insights provided through the Gartner Peer Insights platform

Gartner quantitative market and client insights gleaned from several years of data management software Magic Quadrants (including those for MDM, data quality, metadata management and data integration).

---

**Recommended by the Authors**

Some documents may not be available as part of your current Gartner subscription.

*How Augmented Data Management Capabilities Are Impacting MDM and Data Governance*

*Emerging Technologies: Data Fabric Is the Future of Data Management*

*The State of Metadata Management: Data Management Solutions Must Become Augmented Metadata Platforms*

*What Is Data Fabric Design?*

*Data Management Solutions Primer for 2021*

*Top Trends in Data and Analytics for 2021*

*Cool Vendors in Data Management*

*Hype Cycle for Data and Analytics Governance and Master Data Management, 2020*

*Magic Quadrant for Master Data Management Solutions*

*Market Guide for Active Metadata Management*