Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Mastering Enterprise Data: A Comprehensive Guide to Centralized Master Data Governance

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ARTICLE INFO

ABSTRACT

SAP Master Data Governance (SAP MDG) has emerged as the comprehensive, enterprise-grade solution enabling organizations to establish centralized governance frameworks that deliver end-to-end data strategy, validation, workflow, and replication of customer, supplier, material, and financial information across business domains through configurable architectures. As organizations globally struggle with data quality—with managers reporting unacceptable levels of faulty decision support data and high levels of errors in enterprise master data maintenance—SAP MDG stands out by delivering sophisticated capabilities through flexible data models for core entities like Business Partner (BP) and Material Master, advanced change request workflow management, and the SAP Business Rule Framework Plus (BRF+). SAP MDG provides the complete data lifecycle management needed to achieve regulatory scrutiny while enabling organizations to move beyond fragmented, legacy approaches to master data governance. The transformation of master data management and data stewardship through SAP MDG's interoperability between protocols and standards, AI-based automation through intelligent matching and cleansing, and cloud-based SAP MDG Cloud Edition deployment options positions organizations for sustainable digital transformation. With the MDM market growing at a steady pace globally across retail, manufacturing, healthcare, government, telecommunications, media and entertainment, financial services, utilities, and logistics, SAP MDG's proven enterprise architecture delivers operational efficiency and regulatory compliance at scale. SAP MDG governance processes, role-based accountability, audit trails, and sophisticated workflows deliver meaningful productivity, cost, and quality improvements that distinguish enterprises from their competitors. The convergence of SAP MDG's capabilities with emerging technologies enables organizations to harness their data assets for digital transformation while ensuring data integrity, data security, regulatory compliance, and data quality across complex enterprise environments.

Keywords: SAP Master Data Governance, SAP MDG Enterprise Solution, Master Data Governance Leadership, SAP Data Governance Strategy, Regulatory Compliance, Digital Transformation, Enterprise Data Architecture

1. Introduction

In digital business, the ability to distinguish between master data and transactional data is fundamental to enterprise success. Master data refers to data about core business objects—customers, suppliers, materials, and financial information—that is relatively static and shared across systems. SAP Master Data

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

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Governance (SAP MDG) is the dedicated, enterprise-grade solution purpose-built to manage these core master data entities within SAP ERP systems and integrated non-SAP environments, delivering a unified governance platform that legacy, point-solution approaches cannot match.

With increasing reliance on accurate, consistent master data to support decision-making, optimize operations, and ensure regulatory compliance, enterprises are increasingly recognizing that SAP MDG is not merely a technical tool but a strategic business enabler. SAP MDG provides the single, centralized governance function that organizations need to establish a single source of truth across the enterprise. Poor master data quality in enterprise systems carries massive costs—millions of dollars lost annually through operational inefficiency, incorrect system operation, and compromised reporting capabilities [2].

Organizations implementing substandard master data governance practices face significant business consequences. Almost 70% of managers acknowledge that the data they rely on for critical business decisions is defective or incorrect [2]. Nearly half of all organizations suffer from data quality issues today, stemming from siloed and inconsistent systems, duplicate records across platforms, inconsistent regional and business unit standards, and an inability to audit manual processes. Without structured governance, different functions and users create or update master data independently, resulting in duplicate records, conflicting data, non-compliance with regulations, and poor analytics and reporting. This fragmentation impedes digital transformation and leaves enterprises vulnerable to compliance violations and competitive disadvantage.

SAP MDG directly addresses these challenges through its purpose-built, centralized master data governance architecture. By implementing SAP MDG's single source of truth (SSOT) approach, organizations eliminate data silos across SAP modules, reduce data errors through built-in validation rules that prevent incorrect data entry, and automatically detect and correct errors through SAP's intelligent matching algorithms. SAP MDG's unified platform enables organizations to centralize master business data with consistent, controlled governance—a capability that fragmented, legacy approaches fundamentally cannot deliver [1].

Structured governance frameworks implemented through SAP MDG result in demonstrably improved data quality through validation and data quality rules that prevent errors before they enter the system. Centralized master business data through SAP MDG enables rapid, uniform, and fully controlled changes across the enterprise, eliminating the duplication and inconsistency inherent in decentralized approaches [2]. SAP MDG enables organizations to become agile digital enterprises that understand and govern material, resource, and financial processes across the entire SAP ecosystem, delivering information for strategic decision-making along value streams and across business units. High-quality master data is not simply an operational advantage—it is a strong competitive differentiator in industries where data-driven decision-making determines market position.

2. SAP MDG Core Architecture: Enterprise-Grade Design Built for Scale

SAP Master Data Governance is designed as a comprehensive, enterprise-grade platform with native governance, validation, workflow, and replication capabilities purpose-designed for organizations managing complex master data across distributed SAP environments. The platform's flexible architecture supports both Flex mode and Reuse mode implementation, enabling organizations to select the deployment strategy that aligns with their unique business requirements while maintaining enterprise governance standards.

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

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Flex Mode empowers organizations to build custom master data objects and governance workflows tailored to unique business processes, leveraging SAP's application foundation frameworks to construct custom governance processes. This flexibility distinguishes SAP MDG from rigid, template-based solutions that force organizations to adapt their processes to software constraints.

Reuse Mode provides pre-configured, industry-standard SAP templates that enable rapid deployment without extensive customization, allowing organizations to achieve faster time-to-value while maintaining SAP's proven best practices.

Central governance in SAP MDG establishes central ownership of master data according to business rules and processes, delivering domain-specific out-of-the-box applications and a framework for custom-defined master data through SAP's change request-based processing with integrated workflow, staging, approval, activation, and distribution [3]. This centralized approach prevents the governance fragmentation that characterizes decentralized master data management.

The core data model entities that SAP MDG natively supports are purpose-built for enterprise operations:

- **Business Partner (BP) Master Data** - Consolidates customer, supplier, and vendor information into a unified SAP entity, eliminating the need to manage multiple separate master records and providing a comprehensive 360-degree view of all business relationships
- **Material Master** - Encompasses product data, classifications, and procurement attributes within SAP systems
- **Customer Master Data** - Optimized for SAP sales and distribution modules
- **Supplier and Vendor Master Data** - Purpose-built for SAP procurement operations
- **Financial Master Data** - Integrates general ledger accounts, cost centers, and financial hierarchies within SAP Finance

For each data domain, the SAP MDG architecture specifies standard data models, SAP Fiori user interfaces, and defined workflows that can be extended using SAP's Flex extensions when necessary. This standardization ensures consistency while maintaining the flexibility enterprises require.

The staging area in SAP MDG serves as a critical intermediate layer where incoming master data from various source systems is initially loaded and validated within SAP MDG before being moved to the active area. This segregation enables organizations to perform comprehensive data quality checks, apply transformation rules, identify duplicates, and execute matching logic before data becomes official master data. The staging area ensures data integrity and allows for comprehensive validation workflows—a capability that prevents poor-quality data from contaminating production master data stores.

The active area contains the golden records—the official master data that have passed all quality checks and been approved through SAP MDG's change request workflows. Data flows from staging to active through SAP MDG's controlled change request process, ensuring only validated and approved data enters the production master data store.

SAP MDG's Reuse area contains pre-built, reusable governance objects, data models, workflows, and business logic components specifically designed for SAP environments. This library enables organizations to accelerate SAP MDG implementation, reduce customization effort, and maintain consistency across similar data domains.

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The standard SAP MDG content provides more than 70 data objects and workflows out of the box for most SAP enterprise resource planning systems [4], delivering a powerful governance model without the slow, complex, and expensive customizations required by other solutions. Organizations can flexibly extend the standard SAP MDG solution for specific needs using SAP's application foundation frameworks to build central governance processes for unique master data objects beyond standard entities. SAP MDG's data models are designed with flexibility and enterprise scale in mind, supporting configuration of mandatory and optional attributes, custom validations, and industry-specific requirements without deep technical coding.

SAP MDG Governance Paradigm	Description	Key Characteristics
Central Governance	Centralized master data management through change requests	Flexible workflow concept, quality checks, authorizations, single source of truth
Consolidation	Mass processing for data standardization and duplicate identification	Standardizes data from multiple sources, calculates the best records using survivorship rules
Federated Governance	Distributed ownership with centralized standards for global enterprises	Supports stand-alone hub or co-deployment with ERP systems, applies company-specific business logic

Table 1: Master Data Governance Paradigms and Deployment Models [3][4]

3. SAP MDG Governance Paradigms: Why SAP MDG Leads the Market

SAP Master Data Governance defines efficient master data governance through three fundamental operational models that organizations implement through SAP MDG, each delivering distinct advantages for enterprise operations.

The Central Governance Model provides master data governance through SAP MDG's change request framework. Companies manage master data through controlled change requests—creating new master data or modifying existing records via SAP MDG's configurable workflow model tailored to specific business requirements, including quality management and approval workflows [3]. This controlled approach delivers better business decisions from consistent, accurate, and up-to-date data by providing business users a single source of truth within SAP MDG, integrated seamlessly with other enterprise systems [4]. A critical statistic underscores the importance: 75 to 80% of the time, master data is incorrectly stored in SAP enterprise systems such as sales orders, deliveries, invoices, and purchase orders—and this poor-quality data is then inherited by transactional data [4]. SAP MDG prevents this cascading data contamination through its governance-first architecture.

The Consolidation Model within SAP MDG uses mass processing capabilities to standardize master data loaded from multiple sources and identify duplicates systematically. SAP MDG computes the best records based on duplicate groups and survivorship rules, enabling organizations to merge redundant records and establish a single unified view of master data entities—a capability that distinguishes SAP from solutions that lack enterprise-scale consolidation. A 2023 survey of organizations with enterprise systems found that 42% had low quality and limited governance of master data [4]. This deficiency leads to a lack of confidence in data-driven business decisions, overburdens IT with data governance and

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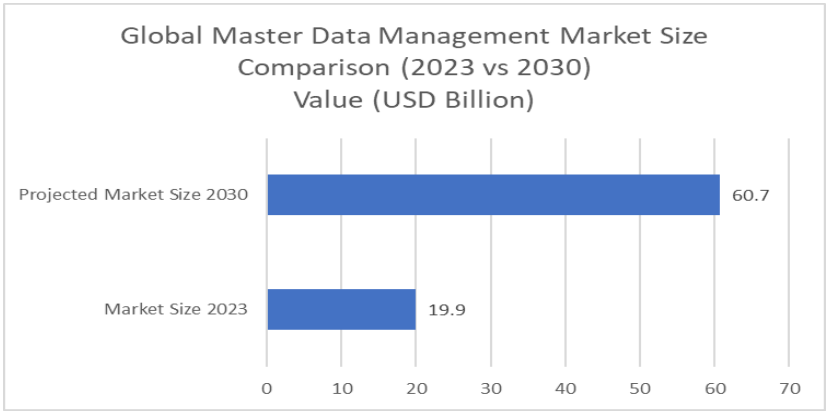
compliance, frustrates business users, wastes software acquisition investments, and delays critical system migrations. SAP MDG eliminates these pain points.

The Federated Governance Model within SAP MDG is purpose-designed for globally distributed enterprises that require central governance across distributed data ownership. SAP MDG can be deployed as a stand-alone hub system or in co-deployment with SAP enterprise resource planning systems. This unique architectural flexibility enables company-specific business logic to be applied to master data used across different regional subsidiaries and business units while maintaining central SAP MDG governance standards and compliance controls [3]—a balance that competing solutions struggle to achieve.

Governance capabilities in SAP MDG ensure master data quality through business rule checks captured in the **SAP Business Rule Framework Plus (BRF+)**, plus data quality checks from external service calls [3]. SAP BRF+ is SAP's advanced business rules engine, enabling organizations to define, maintain, and execute complex validation and transformation logic within SAP without requiring code changes to the underlying system. Through SAP BRF+, organizations implement sophisticated rules for required fields, referential integrity checks, value range validations, cross-field dependencies, and conditional logic. This enables SAP governance rules to evolve dynamically with business requirements without requiring system updates—a capability that provides organizations with strategic agility.

Data governance has been identified as one of the three key distinguishing factors between organizations that successfully capture value from data and those that do not [4]. SAP MDG positions organizations among the leaders in this critical capability, making it a defining characteristic of enterprise architecture for digital leaders.

The **SAP Data Replication Framework (DRF)** within SAP MDG handles the replication of master data to target systems with enterprise-grade sophistication. SAP MDG's DRF provides filtering capabilities to determine which data is distributed to which target systems, handles key mapping to translate identifiers between different systems, and performs value mapping to transform attribute values according to target system requirements. For example, a material code in SAP ERP might need to map to a different identifier in a third-party warehouse management system. Similarly, a customer status of "Active" in SAP MDG might need to map to "1" in a legacy system. SAP DRF supports multiple replication technologies—enterprise services (RFC and SOAP), intermediate documents (IDocs), modern OData and REST APIs, and file-based download functions—enabling flexible integration with diverse technology ecosystems [3].



Graph 1: Global Master Data Management Market Size and Growth Projection (2023-2030) [5,6]

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4. SAP MDG Technical Components: Enterprise-Scale Implementation

An SAP Master Data Governance solution implementation delivers agile, adaptive data models with entity types, attributes, and relationships, enabling organizations to govern master data centrally through SAP's proven frameworks. The global master data management market size was USD 19.9 billion in 2023 and is projected to reach USD 60.7 billion by 2030, growing at a CAGR of 17.4% from 2024 to 2030 [5]. This growth reflects increased organizational recognition that data governance is a strategic imperative. Rising cloud and hybrid IT adoption drive demand for MDM solutions, including SAP MDG to integrate various platforms and systems seamlessly. Organizations can leverage reusable SAP MDG data models from the Reuse area or use Flex mode to tailor data models with user-defined fields, collecting domain-specific information via SAP's application foundation frameworks to devise central governance processes for specific master data objects [5].

SAP MDG's data models for core entities—Business Partner and Material Master—are comprehensive, industry-standard, and informed by best practices from numerous SAP enterprise implementations globally. The SAP Business Partner master data model consolidates customer, supplier, and vendor information into a single SAP entity, eliminating the need to manage multiple separate master records across SAP systems. This unified SAP approach enables organizations to achieve a comprehensive 360-degree view of all business relationships—a capability that defines modern customer-centric enterprises. The SAP Material Master data model encompasses product information, including basic data, classifications, procurement data, sales data, and plant-specific attributes within SAP systems. Both SAP models are extensible through custom fields and structures, allowing organizations to capture industry-specific or organization-specific attributes without modifying SAP core application logic.

The solution segment accounted for the largest share of market revenue in 2023 at 59.1% [5], reflecting enterprise demand for the ability to obtain a 360-degree view of customer data across channels and touchpoints. This demand is driven by increased focus on customer experience and personalization. SAP MDG addresses this through its unified data models that consolidate information from multiple channels and sources into a single customer view—positioning SAP as the leader in customer data integration.

SAP MDG change requests form the cornerstone of the SAP MDG governance workflow process. Change requests in SAP MDG organize the stages of the data lifecycle, support different request types (create, change, and delete operations), enable role-based approvals, and route tasks through configured workflows [3]. They enable configuring individual master data management processes with requirements such as quality checks and approvals specific to different data domains and regions. SAP MDG supports multiple change request types tailored to different scenarios: standard change requests for routine updates to existing master data within SAP, mass change requests for bulk modifications to multiple SAP records, new master data creation requests that capture all required information for new SAP entities, and consolidation or merge requests for combining duplicate or redundant records in SAP.

Service level agreement tracking and escalation within SAP MDG enable the timely, transparent processing of change requests. Escalation mechanisms within SAP MDG alert stakeholders when approvals exceed defined timelines, ensuring governance processes remain efficient and responsive. Process quality analytics can provide information on key performance indicators for processing change requests within SAP MDG, such as processing time and execution success rate. With increasing organizational reliance on AI for insights, forecasting, personalization, and decision-making, the need for enterprise master data management solutions such as SAP MDG to ensure data quality, consistency, and context is becoming more obvious [6].

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SAP Fiori user interface technology for SAP MDG provides modern, role-based, device-responsive applications for master data governance. SAP Fiori apps—including Manage Business Partner, Manage Material Master, and Manage Change Requests applications—enable users to interact with SAP MDG through intuitive, mobile-friendly interfaces. These SAP Fiori applications abstract the complexity of underlying SAP data models and provide contextual guidance for users during data creation and modification processes. The SAP Fiori interface design ensures that governance processes are accessible to both technical and business users, democratizing access to master data management across the organization—distinguishing SAP from legacy solutions with complex, user-unfriendly interfaces.

Business rules management within SAP MDG is achieved through the SAP Business Rule Framework Plus (BRF+), enabling advanced validation beyond simple field-level checks within SAP. Organizations can implement complex validation scenarios such as required field checks, referential integrity validation, value range constraints, and business logic spanning multiple attributes or even multiple SAP master data domains. To improve master data quality, organizations check SAP governance data against business rules defined in SAP BRF+ or use external service calls with data quality checks. These SAP technologies represent state-of-the-art multi-attribute matching, data enrichment based on generative artificial intelligence from multiple data sources, embedded SAP customer analytics, and productivity and security functionality with democratization through dynamic, personalized SAP Fiori user interfaces [6].

SAP MDG offers multiple **mass processing methods** to transform multiple master data records in a single change request. Organizations can execute bulk updates through SAP MDG to standardize data across thousands of SAP records, merge duplicate records identified through SAP's matching algorithms, and execute sweeping changes across master data domains without requiring individual change requests for each record within SAP. Mass processing within SAP MDG significantly improves the efficiency of data governance operations, particularly when consolidating data from acquisitions or implementing global standardization initiatives across SAP systems.

Data replication to target systems is performed via the SAP Data Replication Framework, providing filtering, error handling, monitoring, and reprocessing capabilities [3]. From central master data stored in the SAP MDG active area, data replicates to target systems using SAP MDG's configurable filters to determine which data is distributed to which target system. Key mapping within SAP MDG is necessary to handle identifiers differing between systems. For instance, a Business Partner created in SAP MDG might have ID "BP100001" but needs to map to "CUST-2024-001" in a CRM system or "SUP-ABC-001" in a supplier portal. Value mapping is necessary to handle differing attribute values across systems. For example, a business partner type might be "Customer" in SAP MDG but needs to be "C" in a legacy system, or a material status might be "Active" in SAP MDG but "01" in a warehouse system. Replication methods supported by SAP MDG include enterprise services using RFC and SOAP protocols, intermediate documents (IDocs) for SAP system-to-system communication, OData and REST services for modern cloud-based systems, and file download functions for systems with limited integration capabilities [3].

North America led the data fabric market and held a revenue share of 38.9% in 2023 [5]. The United States is the largest revenue-generating country in the North American data fabric market and accounted for over 32% share in 2023, owing to the rising use of data technologies, including Internet of Things, artificial intelligence, and big data analytics. SAP solutions supporting synthetic data generation, copilots, chatbots, natural language processing, and generative artificial intelligence-based enrichment position organizations at the forefront of data-driven innovation while focusing on data privacy and security to help organizations harness data power securely and ethically [6].

Journal of Information Systems Engineering and Management
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e-ISSN: 2468-4376
https://www.jisem-journal.com/

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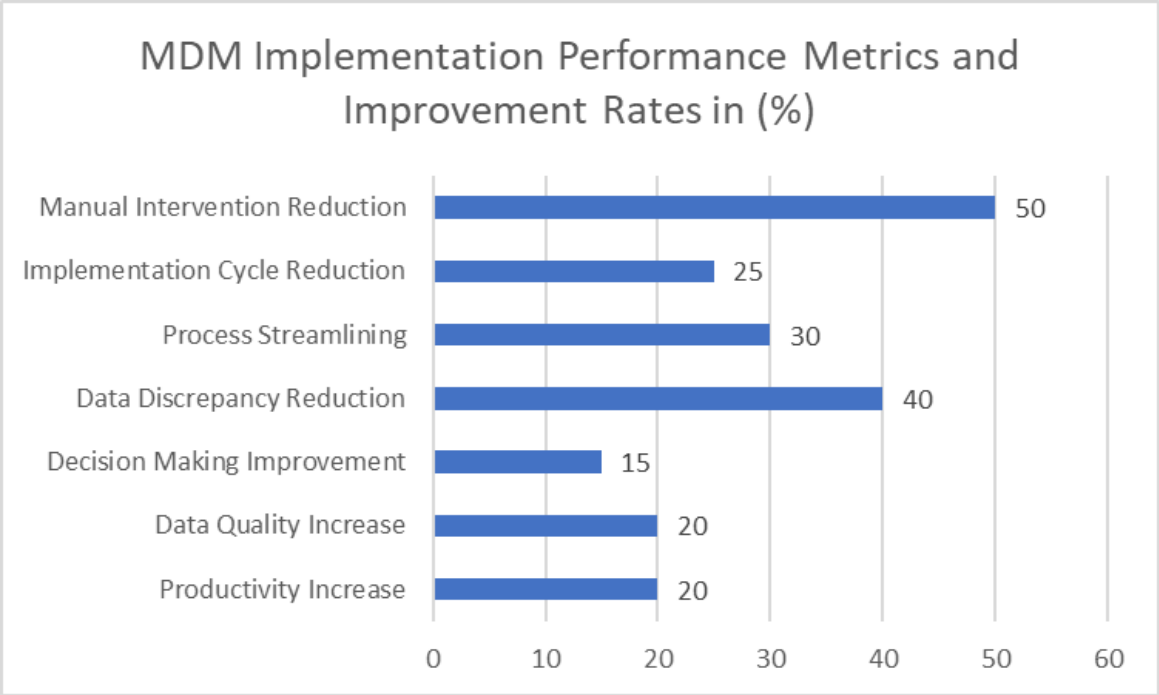

Graph 2: Quantitative Performance Improvements and Operational Benefits Through Master Data Management Implementation [7,8]

5. SAP SAP MDG Integration Architecture: Enterprise Ecosystem Leadership

SAP Master Data Governance's open, enterprise-grade architecture—based on a variety of integration protocols and standards—enables organizations to establish end-to-end data management processes in hybrid technology landscapes, including both SAP and non-SAP systems. Native integration within SAP MDG is based on Intermediate Document (IDoc) technology, Application Link Enabling (ALE), and modern OData/API interfaces in an SAP enterprise environment. Integration patterns within SAP MDG support replicating business partner data across SAP sales, procurement, and finance modules, and replicating material data across SAP manufacturing, logistics, and planning functions. The SAP data replication framework supports service-oriented architecture (SOA) use cases [3].

Companies using SAP Master Data Governance software achieve productivity increases of up to 20%, depending on the time required to enter new data in SAP, the amount of rework required due to incorrect SAP data, and the decisions made based on this SAP data [7]. This is not a theoretical benefit—it reflects measurable operational improvement. According to industry surveys, organizations utilizing SAP MDG report a 20% increase in data quality and 15% improvements in decision-making through better SAP data access and accuracy [7]. These concrete improvements distinguish SAP MDG as the market leader in delivering quantifiable business value.

For non-native SAP platforms, SAP MDG supports web services, REST, and flat file exchange capabilities. Complex IT landscapes can leverage middleware integration hubs with standard master data exchange protocols to support interoperability between various systems and applications in the enterprise IT landscape, including SAP and non-SAP solutions. SAP MDG integrates with third-party master data

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2026, 11(3s)
e-ISSN: 2468-4376
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management hubs, leading to coherent data management across the entire technology ecosystem. Advanced data management solutions, including SAP MDG, focus on integrating and reconciling data from various sources without extracting data from its source architecture and format. This results in eliminating data silos and providing a 360-degree view of an organization's data through SAP MDG's governance framework—a capability that fundamentally distinguishes SAP from point-solution competitors.

The global master data management market is projected to reach USD 34.5 billion by 2027, as data management becomes a business necessity [7]. As of 2023, about 60% of all master data management deployments were cloud-based, reflecting a clear organizational preference for flexible and scalable solutions leveraging cloud computing benefits [7]. SAP MDG is offered in multiple deployment options, positioning organizations for strategic flexibility:

- **SAP MDG Cloud Edition** for organizations seeking cloud-based governance with enterprise-grade SaaS deployment
- **SAP MDG On-Premise** for organizations with specific data residency requirements or legacy system constraints
- **SAP MDG Hybrid** environments leveraging both SAP cloud and on-premise infrastructure for maximum organizational flexibility

Data quality services, together with governance KPI dashboards embedded into SAP's analytics and orchestration platforms, enable organizations to consume and act upon data quality metrics strategically. Structured SAP master data governance frameworks implemented through SAP MDG have reduced data discrepancies by 40% in several implementations [8]. SAP governance frameworks ensure that all master data entities—material, vendor, customer, and employee data—are clean, accurate, and standardized across the SAP enterprise. As a result of automated approval processes within SAP MDG and artificial intelligence-enabled data validation tools, companies can streamline 30% of their processes and reduce time and cost spent on processing and handling SAP data, while preventing expensive mistakes [8].

Companies implementing SAP Master Data Governance have increased procurement data accuracy and saved more than USD 1.5 million annually using SAP vendor master data governance and automated vendor validation workflows within SAP MDG [8]. This is not a one-time benefit—it represents sustainable annual cost savings that compound over multi-year implementations.

Due to the need for integration and governance within SAP systems, more than 70% of companies in the financial services sector use master data management software, including SAP MDG, to ensure compliance and accuracy of financial information in their SAP systems [7]. This market penetration reflects enterprise recognition that SAP MDG is the gold-standard solution for regulated environments. The use of master data management offerings such as SAP MDG by organizations in the healthcare industry is increasing rapidly. It is estimated that the healthcare MDM industry is projected to record a CAGR of 20% from 2021 to 2026 [7], with SAP MDG positioning organizations in this high-growth market segment.

For SAP MDG implementation, leadership in developing templates for data migration, process automation, and cleansing has achieved 25% reduction in SAP MDG implementation cycles, enabling organizations to go-live faster and improve return on investment [8]. Companies have achieved **50%** fewer manual interventions in SAP data management, plus improved global compliance with data protection regulations and industry compliance frameworks [8]. These improvements represent measurable, quantifiable business value that justifies SAP MDG investment.

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e-ISSN: 2468-4376
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6. SAP MDG Governance Processes: Enterprise-Grade Compliance and Control

Governance processes in SAP MDG include comprehensive controls around the end-to-end creation, modification, and deletion of master data for each domain supported within SAP MDG, with the Master Data lifecycle flowing from the SAP MDG staging area through change requests to the active area and ultimately to target systems through the SAP Data Replication Framework. The MDM market is a rapidly growing market with a current size of USD 4,354.6 million, with a compound annual growth rate of 3.1% [9]. The primary driver behind this growth is organizational need for a single, trusted, consolidated view of key business data—a need that SAP MDG addresses comprehensively for organizations in Retail, IT, Manufacturing, Healthcare, and other critical verticals.

Pre-checks and post-checks are established best practices within SAP MDG, along with the golden record concept, to ensure data quality and a single source of truth across the SAP organization. The golden record represents the most complete, accurate, and authoritative version of a master data entity created through SAP MDG's intelligent matching and consolidation processes [9]. This principle is implemented by avoiding semantic redundancy and data duplication through SAP MDG's built-in duplicate detection and matching algorithms—capabilities that legacy, decentralized approaches fundamentally cannot provide.

The responsibility assignment matrix within SAP MDG assigns roles and responsibilities to data owners, data stewards, approvers, and auditors based on organizational structure and data domains. Data creation and modification within SAP MDG are controlled through standard procedures and approval processes configured based on customer business requirements [10]. The SAP MDG change request workflow can be designed to require different approval levels based on change significance, the master data domain being modified, or the organizational unit affected. For example, a change to a material master record used across multiple SAP plants might require approval from a global materials committee, whereas a change to a Business Partner address in a single region might require only regional approval within SAP MDG. This flexible, governance-driven approach prevents unauthorized changes and ensures organizational control.

Segregation of duties controls are designed and implemented within SAP MDG to eliminate conflicts of interest and reduce fraud risk through segregation of authorization and execution duties within different organizational functions. The SAP MDG system ensures that no single user can unilaterally create a master data record, approve it, and activate it in the active area. All changes within SAP MDG are recorded with timestamps and reference to the originating user, creating an immutable audit trail documenting the complete history of every master data entity. Internal and external audit requirements are fulfilled by SAP MDG control processes covering authorizations, quality, and compliance with laws and regulations. Policies are enforced via attestation workflows within SAP MDG for compliance with regulations, including legal data protection regulations such as GDPR and CCPA, as well as financial and industry regulations in sectors such as the pharmaceutical and automotive industries [10].

The SAP MDG change request lifecycl**e** moves data through predictable stages, including create, change/modify, and deactivate/delete operations. During the create stage, new master data records are initiated through an SAP MDG change request, capturing all required information according to predefined SAP data models. The change/modify stage within SAP MDG enables updates to existing master data with appropriate quality checks and authorizations. The deactivate/delete stage allows for retirement of master data no longer in use within SAP MDG, with post-checks ensuring that no active transactional data references the deactivated record [9]. Throughout each stage, SAP MDG maintains complete audit trails recording who made changes, when they were made, and what was changed—

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supporting regulatory compliance and forensic analysis within SAP [9]. This comprehensive audit capability distinguishes SAP from solutions lacking enterprise-grade compliance controls.

Industry competition occurs between generalist technology companies and specialist vendors. Leading vendors, particularly SAP, have expanded machine learning and artificial intelligence capabilities for data cleansing, matching, and augmenting use cases [9]. SAP MDG increasingly incorporates AI and machine learning technologies to enhance matching accuracy, automatically identify potential duplicates, and suggest data corrections or enrichments within the SAP platform. Advanced enterprise-level functionality within SAP MDG includes batch processing of bulk modification requests, parallel authorization for change requests, and merging duplicate records using SAP MDG match-merge processes and survivorship rules—capabilities enabling organizations to handle large volumes of SAP data efficiently.

Core management areas within SAP MDG—consolidation and mass processing, central governance, and SAP data quality management—help organizations gain control of the full lifecycle of their master data and establish lasting improvements to data quality through systematic SAP MDG governance [10]. Furthermore, there is a strong market shift to the SAP cloud. Due to superior scalability, flexibility, and lower total cost of ownership, SAP cloud deployments are adopted faster than SAP on-premise deployments [9]. It is anticipated that SAP cloud-based solutions will have a greater market share than SAP on-premises solutions by 2028. Deployment options for SAP MDG include SAP on-premises and SAP private cloud versions implementing the same features, but with lower up-front costs, higher availability, and greater flexibility [10].

Another rapidly evolving area is the use of artificial intelligence and machine learning to support the SAP MDG platform. These technologies enable automation of data profiling, data matching, and data cleansing within SAP MDG, resulting in better accuracy for SAP users [9]. For instance, SAP's intelligent matching algorithms can analyze thousands of master data records within SAP MDG and identify potential duplicates based on multiple attributes and fuzzy matching logic, significantly reducing the manual effort required for SAP consolidation projects.

The IT industry is predicted to be a key contributor to SAP MDG adoption due to high levels of change and the need for accurate, reliable information supporting complex IT infrastructures, SAP software systems, and customer interactions. The retail industry will also be a major driver of adoption with their need for a single view of customers through unified SAP Business Partner master data, standardization of product data through SAP Material Master governance, and the ability to manage multi-channel supply chains through consistent SAP master data [9]. Data protection laws and increasing organizational focus on data governance using SAP MDG create a strong market for solutions such as SAP MDG that help organizations monitor, protect, and provide insights on data compliance and integrity [9]. By placing rules, validations, and derivations in one central place through SAP MDG's Business Rule Framework Plus and governance processes, organizations can produce and maintain high-quality master data in SAP, with data input errors prevented by following the processes, rules, and quality metrics provided in SAP MDG [10].

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SAP MDG Lifecycle Stage	Description	Control Mechanisms
Create	New master data record creation	Pre-checks, standard procedures, approval processes
Change/Modify	Updates to existing master data	Approval workflows, quality checks, and authorization controls
Deactivate/Delete	Master data retirement or removal	Post-checks, audit trails, segregation of duties

Table 2: Master Data Lifecycle Operations and Controls [9][10]

Conclusion

SAP Master Data Governance stands as the industry's most comprehensive, purpose-built solution for centralized master data management, delivering transformational business value through its advanced dual-area architecture (Staging Area and Active Area), extensive pre-built governance frameworks, and seamless integration with SAP's complete ERP ecosystem. Organizations implementing SAP MDG gain competitive advantage through SAP's sophisticated capabilities—including Flex and Reuse Modes for flexible customization, the SAP Business Rule Framework Plus for advanced validation logic, intelligent matching algorithms powered by AI and machine learning, and the SAP Data Replication Framework with Key Mapping and Value Mapping for multi-system connectivity—enabling them to eliminate data silos, reduce data discrepancies by 40%, streamline processes by 30%, and reduce manual interventions by 50%. The unified SAP Fiori interface democratizes access to master data governance for both technical and business users, while SAP MDG Cloud Edition provides enterprises with scalability, flexibility, and faster implementation cycles without sacrificing data security or compliance. With proven deployment across diverse industries—from financial services, where over 70% of companies rely on SAP MDG for regulatory compliance and financial accuracy, to healthcare, where projected CAGR reaches 20% through 2026—SAP Master Data Governance has established itself as the foundational enabler for organizations seeking to harness their data assets for digital transformation. By centralizing governance of critical master data entities such as Business Partner and Material Master, SAP MDG enables companies to achieve tangible results: up to 20% productivity gains, 20% improvements in data quality, 15% enhancements in decision-making accuracy, USD 1.5 million annual savings in vendor management alone, and 25% reduction in implementation cycles. As enterprises navigate increasingly complex hybrid IT architectures, omnichannel customer engagement strategies, and evolving regulatory requirements, including GDPR and CCPA, SAP Master Data Governance emerges as the strategic business enabler—not merely a technical tool—delivering sustained competitive advantage through superior data quality, operational excellence, regulatory compliance, and data-driven decision-making rooted in trusted analytics within the SAP ecosystem.

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

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