Optimize Master Data Management Through Federated Data Governance
An Adaptive Model for Trusted, Process-Relevant Data to Drive Greater Insights, Efficiencies, and ROI
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The Master Data Imperative

Organizations have seldom faced greater challenges. Financial markets and corporate finance remain volatile. Customer behaviors are evolving as more people shop electronically. Employee behaviors are adapting as more staff work remotely. And operations are adjusting as supply chains recoil from sudden shocks.

It has never been more important for your enterprise and your lines of business (LoBs) to have access to trusted, high-quality data. They require analysis and insights to respond quickly and accurately to a rearranged business landscape.

But effective master data management (MDM) has long been an escalating imperative. You need the right data in the hands of the right people to optimize operations, understand and serve customers, and speed innovations to market (see Figure 1). And in a digital economy, you need those insights fast.

Figure 1: Business-Critical Initiatives Supported by MDM

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Yet meeting these intensifying requirements hasn’t been easy. In many organizations, data governance is control focused, one size fits all, and separated from real-world use cases. Enterprise MDM becomes an unnecessarily complex and costly undertaking that’s disconnected from local decision-making in the LoBs. And as a result, master data governance initiatives fail to deliver the benefits the organization needs.

Instead, data governance programs, including MDM, should extend throughout the enterprise. They should be context relevant and supportive of frontline decisions and actions. They should be agile enough to respond to rapidly changing business dynamics. And they should drive new innovations, experiences, and business models.

To achieve those goals, you need the right mix of technology and organizational support. Your MDM platform should offer robust capabilities, out-of-the-box integration, aligned data-domain models, and on-demand scalability.

Just as important, you need effective data governance. You must have a governance model that reflects your organization, business processes, and data drivers.

That’s the power of a new MDM paradigm: federated data governance. With federated data governance, you can:

- Skillfully access and share master data to fuel cross-functional analytics, insights, and business processes
- Manage data where it’s best understood to optimize MDM scope, benefits, and effort
- Take a stepwise approach to enterprise MDM to accelerate time to value

Your MDM platform should offer robust capabilities, out-of-the-box integration, aligned data-domain models, and on-demand scalability.
The Importance of **Master Data Integration**

Effective MDM enables integration of data across your enterprise. Integration equips you, for example, to combine operational data from your ERP system with experiential data on how customers interact with your brand. As a result, you’re able to deliver – and reap business returns on – better customer experiences.

You can achieve integration – or something like integration – in a variety of ways. For example, you can treat each LoB application as having its own master data and simply share that data among applications in a point-to-point manner. But this approach is obviously complex and inefficient, and it won’t result in a single version of the truth.

Alternatively, you can use a purely centralized model, creating master data in a single location for consumption by LoB applications. But this approach doesn’t accommodate the governance of context-relevant data attributes required by your LoBs. As a result, inadequate data quality impedes the efficiency and accuracy of LoB processes and insights.

A more effective approach is to place an integration service between your LoB applications (see Figure 2). In this model, the integration service centrally shares all application data. It provides a lingua franca for applications to speak to one another across heterogeneous multi-cloud and hybrid environments. This common language helps link different representations of the same master data domain.

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**Figure 2: Point-to-Point Versus Centrally Managed Integration**

[Diagram showing point-to-point and hub-and-spoke integration models]
The centrally managed integration model achieves further data integration through a common understanding of the exchanged objects, along with key mapping. Key mapping links the storage of identical physical objects under different identifiers in different systems.

An effective integration service should allow you to add your own data to standard master domain models. It should also work with your existing solution landscape, enabling you to leverage current IT investments while exchanging data among applications.

An integration service provides a lingua franca for applications to **speak to one another** across heterogeneous multi-cloud and hybrid environments.

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**INTEGRATION VERSUS DATA GOVERNANCE**

The focus of master data integration isn’t data consolidation or quality – that’s the role of master data governance. Instead, integration provides a distribution layer that gives your line-of-business applications a consistent view of data. Ultimately, a data integration service should increase the effectiveness and reduce the cost and effort of data sharing.
Chief data officers recognize that it’s not viable to merge all data domains across business units and functions to achieve a single enterprise data model. Different data domains have different data needs and require different standards and semantics.

The solution is the SAP® Master Data Integration service. The service enables you to unite separate data models with a shared identity and interoperability.

SAP Master Data Integration enables harmonized integration and distribution of master data objects and data among SAP and third-party applications. In practical terms, it applies standardized fields and attributes, such as name, type, and length, across data models that it then integrates.

The service delivers ready integration achieved in a single, harmonized way across a wide variety of SAP solutions – for example, SAP S/4HANA®, SAP Customer Experience solutions, and Ariba® Network. It also helps enable integration with third-party and legacy software.

The service is an important part of the Intelligent Enterprise, enabling smooth integration of information and insights across your applications, lines of business, and key business processes.

Your data integration service should increase the effectiveness and reduce the cost and effort of data sharing.
A New Paradigm: Federated Data Governance

Your organization needs master data integration to provide the same master data in the same state to all applications that need it. But integration alone won’t optimize data quality. To truly conquer MDM, you also need master data governance. You need to deduplicate existing data, avoid the creation of new duplicates, and make sure new or changed data is consistent right from the start. That way, the master data you deliver to your LoBs will be of the highest quality.

This is the power of federated data governance – a whole new way of thinking about MDM. The federated data governance imperative is driven by:

• The need to flexibly apply the right level of data governance to reduce MDM cost and effort
• The shift in the IT center of gravity to the cloud
• The escalation of MDM as crucial to responding to a challenging business environment
• The growing demand to drive new innovations, experiences, and business models

Federated data governance enables you to manage data where it’s best understood. It intelligently separates your core, enterprise-wide master data from your application-specific master data. It applies the appropriate level of governance based on the scope, ownership, and context of the data. And it empowers you to take a comprehensive, scalable approach to orchestrating data governance across your entire IT landscape.

The federated model is an effective way to bridge on-premise, multi-cloud, and hybrid cloud landscapes. By supporting end-to-end business processes and bidirectional communication, it enables you to fuel cross-functional analytics, insights, and innovation.

Federated data governance is a whole new way of thinking about MDM.
With federated data governance, you manage your core master data separately from application data. You maintain the core master data in a central, independent cloud application. You maintain the application data in the LoB-specific data hubs, with unique data models, data-quality rules, and approval workflows. You also classify which applications need to own and interpret a given data set.

You then federate your MDM processes across your LoBs and applications. That way, the people who use the data maintain and govern it where they use it – eliminating unnecessary central approval and keeping the management of the data in its specific business context.

Federated data governance is especially necessary for businesses that operate in disparate industries. A good example is an energy company with one business unit for upstream oil production, another for retail gasoline sales, and another for alternative-energy development. While the parent company must manage core data standards and requirements that extend across the enterprise, each business unit must maintain its own data standards to meet its own requirements – while still contributing to and consuming core data.

The same concept is useful across LoBs. For example, your procurement function might create new suppliers in a solution such as Ariba® Network, with local processes such as supplier self-service for registration in the online marketplace. Once the LoB application captures the data, application-specific processes for data governance kick in.

Centralized master data orchestration detects which application owns which portion of the data. It then sends the data to the respective owners for quality assurance. For example, it sends core master data to the central hub for approval and enrichment to meet corporate standards. It sends application-specific data to the appropriate owner for context-specific enrichment and to make sure the data quality meets the application’s needs. Once the data is approved by its owners, the integration layer ensures distribution to all other applications.

The federated model is an effective way to bridge on-premise, multi-cloud, and hybrid cloud landscapes.
In fact, federation is valuable to any business that wants to optimize processes, insights, and actions across business units, functions, and geographies. It combines a common understanding of enterprise-wide master data with the management of LoB- or process-specific data attributes that require a high degree of quality.

With the right MDM platform, you can achieve federated data governance by taking advantage of existing systems. It should be straightforward to establish MDM processes that maintain a single understanding of master data and orchestrate that understanding across multiple locations in your IT landscape. And implementation should be cost-efficient.

An effective solution provides support for integration that you can consume in the public cloud to support multi-cloud and hybrid application landscapes. It should include prebuilt but flexible processes that orchestrate data governance across your application landscape. And it must include out-of-the-box integration to keep data in sync.

Let’s say you create a new supplier centrally with core attributes. That would trigger a standardization and enrichment process for application-specific attributes. Alternatively, you can create the supplier in the application component. It would then flow into the centrally installed MDM solution to validate and improve the data. In either case, you can federate the clean, core master data out to other LoB applications.

In this way, federated data governance gives you:
- An adaptive governance model to optimize MDM scope, benefits, and effort
- High-quality core master data, with no duplicates
- Less need for up-front harmonization across business units
- End-to-end data visibility
- The ability to govern data where it’s best understood

Federation is valuable to any business that wants to **optimize processes, insights, and actions** across business units, functions, and geographies.
The Case for Cloud-Centered Federation

Why enable federated data governance in a public cloud? There are numerous advantages.

First, the center of gravity is shifting cloudward for databases, applications, and infrastructures. What’s more, as companies rely on more IoT inputs, that data will be captured in the cloud. MDM is the glue that will bind IoT scenarios to business processes.

Second, the cloud lets you take a stepwise approach to enterprise MDM. You can start small with a single data domain and then expand to additional domains, capabilities, and use cases. You can likewise begin with software as a service (SaaS) and then move to platform as a service (PaaS) – which many organizations prefer.

Third, all the well-established arguments in favor of the cloud apply equally to MDM. Operating expenses for the cloud spread budget predictably over the long term, avoiding up-front capital expenses for on-premise infrastructure. Subscription pricing for software is generally more affordable than licensing fees for installed applications. And continual updates give you immediate access to the latest application innovations.

In addition, the advanced security capabilities of trusted cloud providers protect valuable corporate information and customer privacy. And the scaling-up-and-down agility of the cloud lets you respond instantly to changing workloads.

Market trends show a shift to the cloud – SaaS, PaaS, or infrastructure as a service (IaaS) – for MDM solutions. This is no surprise, as accelerating migrations of data and applications to the cloud are pulling other data management disciplines along with them. These trends will surely continue as more organizations recognize the value of cloud-centered MDM.

Of course, an effective federation platform should enable data governance even if your MDM is currently located on premise. It should then support a smooth cloud migration, whether you’re simply extending MDM into the cloud or embracing the cloud for all MDM activities.
Master Data Governance in the Cloud

SAP has a clear vision for federated data governance and more flexible, adaptive MDM – and the technology to achieve it (see Figure 3).

Figure 3: Data Federation Enabled by SAP Master Data Governance, cloud edition
The SAP® Master Data Governance application provides ready-to-run, domain-specific data governance that empowers you to manage and distribute data across your enterprise. Tight integration with other SAP solutions enables the reuse of data models, business logic, and validation frameworks. Open integration with third-party software supports your entire technology stack.

During the past decade, a large number of market-leading organizations around the world have come to rely on SAP Master Data Governance. Now, SAP has introduced SAP Master Data Governance, cloud edition. The cloud edition of our MDM and integration application offers the core functionality of our on-premise solution, plus specific capabilities that take advantage of the cloud.

SAP Master Data Governance gives you the flexibility to take a centralized or decentralized approach to MDM. In a centralized model, you can create your master data in a single, centralized location. That way, you start with high-quality data and then distribute it to applications and users. Your LoBs can add local attributes – for example, supplier payment terms for a specific context.

SAP Master Data Governance gives you the flexibility to take a **centralized or decentralized approach** to MDM.
With a decentralized approach, you can allow master data to be created at multiple locations across your landscape. Federation centrally prevents creation of duplicates and enables all the relevant data owners to be involved so that master data is at the right quality level before it’s distributed for consumption. Your LoBs get application-specific data for their processes, and your enterprise gets the core data it needs for enterprise-wide operations and analytics.

SAP Master Data Governance optimizes MDM across all your domains. In fact, it comes with domains built in. You can expand on these or add your own to meet unique needs. It also comes with prebuilt capabilities, informed by our decades of experience working with applications and processes that rely on master data. That sets you up for faster and greater ROI.

Just as important, SAP Master Data Governance enables you to perform continual monitoring and improvement of master data quality. Over time, your organization will adopt new processes, make new acquisitions, enter new markets, and launch new business models. Your master data and its quality must evolve accordingly. With SAP Master Data Governance, you can be sure your data models and processes will continue to meet your needs.

SAP Master Data Governance gives you a clear path to federated data governance. If you’re already using the on-premise edition, you can move all or part of your MDM workload to the cloud on your own timeline while complementing and extending the solution with cloud capabilities. You retain the functionality you’re familiar with while gaining the speed, scalability, and cost-effectiveness of the cloud.

If your organization is just embarking on MDM or refining early MDM efforts, you can begin with data integration in the cloud. Once you’ve mastered cloud-centered integration, you can continue toward data governance and data quality management in the cloud. You’re then positioned to embark on federated data governance.
For federated data governance to be effective, you need intelligence built in. Intelligent capabilities must be directly embedded into core solutions so that you don’t need to create separate data lakes. You likewise need a common data foundation and semantic layer so that business processes can talk to one another and data can be consumed across your heterogeneous IT landscape.

At the same time, intelligent technologies are proliferating throughout your organization. Emerging capabilities such as the IoT, artificial intelligence (AI), machine learning (ML), robotic process automation (RPA), and blockchain promise to transform efficiencies, insights, and experiences.

You need a data platform advanced enough to integrate intelligent technologies with your analytics and decision models (see Figure 4).

Becoming an Intelligent Enterprise

Figure 4: MDM Supported by Intelligent Technologies
You also need underlying high-quality data to allow for highly automated process execution. That way, you can make sure your investment in intelligent technologies is helping to get the right insights to the right people in the right context and at the right time.

Ultimately, federated data governance can help your organization become an intelligent enterprise.

Intelligent enterprises automate complex business processes around a united core of master data in the cloud. They then apply advanced technologies to turn insight into action across the business in real time. As a result, they can automate processes, quickly innovate new products and services, create new business models, and deliver exceptional experiences.

For federated data governance to be effective, you need intelligence built in.
First Steps to Federated Data Governance

Achieving federated data governance can be a journey – though it doesn’t have to be a long one. But your first steps should begin now.

• **Take a data management health check.** Evaluate honestly the effectiveness of your existing data management programs and governance organization. Can you trust your core master data? Do LoBs have the quality information they need? Identify practices you can build on – and the net-new approaches you require to be more agile.

• **Assess emerging use cases.** Which business scenarios are being digitalized? How will data analytics change? How will intelligent technologies like the IoT, AI, ML, RPA, blockchain, and other forms of automation transform your data needs? You want your data management to be future proof.

• **Track your shift to the cloud.** Which workflows will shift to the cloud, and which will remain on premise? How many new applications will be cloud native? If your IT strategy is cloud focused, your MDM should be too.

• **Identify your technology enablers.** Achieving federated data governance requires the right foundational technology. You need a platform that enables data integration across a heterogeneous IT landscape. And you want a solution that combines cloud-centered core MDM with application-specific data management where your lines of business need it.

Finally, federated data governance calls for the right technology partner. Look for a trusted advisor with a clear vision for MDM and adaptive data governance – and a detailed road map for transforming the management of your most valuable data assets.

READY TO CONQUER MDM?
To learn more, visit the master data governance SAP Community and our informative Web pages on enterprise master data governance to explore products, services, reports, videos, and expert insights.