SUPERIOR DATA QUALITY
DRIVES BETTER INTEGRATION

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IT integration is about connecting digital systems and applications in order to increase availability and eliminate silos, both on-premises and in the cloud. Master Data Management (MDM) is all about improving organizational data quality by propagating a unified and holistic approach to data governance. But as it turns out, integration and MDM share an important, symbiotic relationship.

How integration complements MDM's mission

MDM provides its own out-of-the-box enterprise connectivity through APIs, RESTful Web services and messaging. But sophisticated integration solutions, such as Enterprise Service Bus (ESB) and system/application connectors, further help MDM to fulfill its enterprise mission of cleansing, deduping, reconciling and validating any kind of sharable, enterprise data across multiple and often disparate systems. In other words, integration should be viewed as a key MDM component and facilitator. Integration broadens and scales up MDM's organizational outreach and helps drive better data quality.

In addition to providing system and application connectivity, the integration and MDM relationship is about merging corporate data—or providing data integration. Prior to discussions evaluating internal data governance functionality, new customers want to understand the scope and comprehensiveness of an MDM solution's data integration capabilities, and how quickly those capabilities can collect and deliver mission-critical data sets into the MDM hub or repository.

Focus: customer data management

No use case better illustrates the value of integration and MDM's partnership than managing customer data. Leaving no customer data behind is every business' objective. But customer data (especially at B2C levels), is historically the most difficult master data of all to maintain.

Where do we get customer data? Anywhere we can! Customer data is scanned through hand-held devices (think trade shows), entered through e-commerce and B2B sites, and volunteered through a myriad of APIs at multiple store locations—many with different data entry standards. Add M&A activity into the mix (guaranteeing a new layer of predictable but difficult to trace redundancies), and customer data is surely the most voluminous, and potentially most inaccurate of all master data domains.

Integrating MDM's single version of truth

Creating a single version or view of the customer master record is sometimes referred to as the "single version of truth." MDM's goal is to produce that truth by merging and matching different representations of the same customer record, thereby creating a "gold copy." In this process, addresses are cleansed and standardized, missing or incomplete attributes are reconciled and provided, and customer names are synchronized with locations. By understanding which particular customer system is the most trusted source for a given data attribute (e.g., ZIP codes, social security numbers, tax IDs, etc.), MDM can execute a series of business rules and algorithms (known in part, as survivorship rules), in order to create that highly coveted single version of truth.

But, whose truth is it anyway, when certain critical customer systems fail to be integrated into, or take part in the data management process? This lack of integration can easily undermine the integrity of MDM's governance over core customer master data. And what happens when the data management objective is to move beyond managing basic customer contact information and expand the customer data integration role for supporting large enterprise initiatives (e.g., customer experience, product on-boarding or supply-chain optimization)?

MDM should be counted on to follow the data. Managing customer data within a CRM or ERP system, spelling check (in real time), data entry through e-commerce APIs, and synchronizing product preferences and buying habits collected through order entry and even social media (enabling streaming and predictive analytics in order enhance the retail experience), is what digital enterprises expect of a viable platform solution. However, this leading-edge, governance journey is only achievable with the help of a flexible, integration solution.

Conversely, while maintaining the quality for core master data may not seem terribly exciting, having disparate versions of what's supposed to be the same customer may well ensure that buying preferences, and product and service order histories may be misaligned, rendering valuable customer enrichment sources ineffective.

Customer data enrichment

These days, customer MDM is going well beyond its early role of merging/consolidating multiple versions of customer records in order to create a single version of truth. Of course, data governance is still very much about cleansing, matching and reconciliation. But once having stabilized customer master data, enrichment becomes the next important thing.

Three major examples of customer data enrichment include:

- Geocoding: Having verified the accuracy of addresses, geocoding enriches customer location data with GPS coordinates, thereby enabling timely product deliveries and replenishment. It enables geographical support for improved customer service by picking alternative resources for in-stock products. Geocoding can also help pinpoint stores that customers frequent, allowing site utilization analysis. From an internal marketing and sales perspective, it is an application enabler for accurately determining market segmentation or sales territories.

- Reference data/code sets: Internally created code sets can be correlated to enrich customer master records that indicate product buying histories, participation in loyalty campaigns and also simply categorizing customers based on buying preferences. In other words, code sets can be used to quickly asses customer profiles.
- Sensor data: The Internet of Things (IoT) has become the emerging use case of this decade and one of the largest growing contributors to big data. The raw sensor data emitted from a customer's smartphone can potentially be harnessed to provide additional information about customer behavior in terms of website activity, interaction with in-store systems (loyalty sign-ups, etc.), and even intra-departmental preferences within one store location.

Since sensor data can be viewed as transactional, or even its own brand of system metadata, it needs to be contextually aligned with the customer data record in order to provide meaningful enrichment.

Superior data quality drives better integration

Question: What do enterprise ERP systems, applications, analytics and integration solutions have in common?

Answer: Superior data maximizes the efficiency and effectiveness for all of them.

The good news is that integration will simplify and streamline the IT enterprise. Applications integrated through a common ESB instead of point-to-point connections will provide faster and more unified delivery, increasing productivity. Integration will reduce time-to-market for new development projects, enable enterprise mobile apps and significantly improve partner relations.

Unfortunately, and despite these tremendous benefits, corporations should not implement integration without addressing the critical need for good and consistent data quality. In fact, poor or mediocre data quality will undermine and compromise the advantages integration provides.

To be painfully clear, while integration is designed to quickly and efficiently move various types data throughout the enterprise (see table below), it is not designed to fix bad data's most prevalent symptoms. In this respect (fairly or not), integration becomes complicit in the distribution of bad data.

Types of Bad Data	Description	Possible Outcomes
Duplicate Data	Two or more identical records	Misrepresentation of inventory counts/ duplication of marketing collateral, unnecessary billing
Conflicting Data	The same records with differing attributes	A company name with different versions of addresses causing deliveries to the wrong location, customers receiving wrong products
Incomplete Data	Missing attributes	Payroll not processed because of missing social security number. Unable to identify a loyal customer
Invalid Data	Attributes not conforming to standardization	Customer records where the ZIP code contains four digits, instead of five

The business down-side of inconsistent and inaccurate data is well documented. Sending an invoice with incorrect data, for example, can cause delays, frustration, re-work and even loss of revenue. Moreover, major analysts have long provided studies that quantify the true cost of bad data (in actual dollars and cents), and its severe impact on the bottom line.

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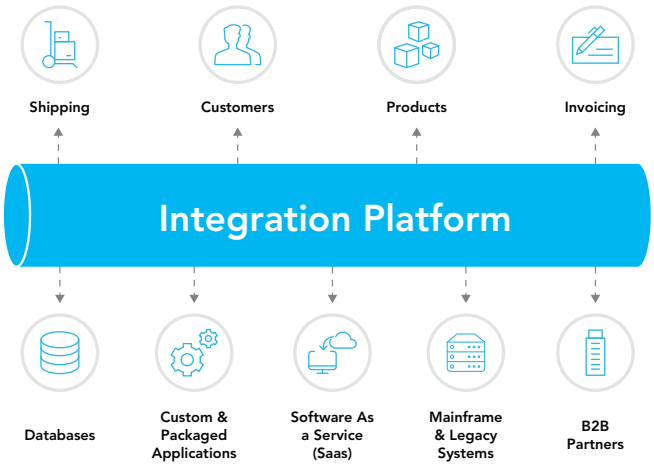

Like applications, integration needs good and consistent data.

Integration as process

Integration solutions and strategies are designed to improve enterprise processes. Many companies will think of integration first as the driver for fulfilling the goals of business optimization efforts. In other words, welcome to process-driven integration.

But, in fact, an ESB and for that matter Business Process Management (BPM) are themselves processes—and while considered foundational to a successful outcome of the same major enterprise initiatives—they are subject to the same mitigating effects of inferior data quality.

Here MDM plays a critical role in maximizing these processes just as it does by consolidating disparate data from multiple enterprise applicatons.

MDM reduces errors in designs produced by a BPM system when the highest-quality data is available. Re-usable services become more efficient by consuming accurate and complete data. Even the efficiency of an API management platform, whose purpose is to unlock the unique value of a company's data and services, is susceptible to inadequate data quality.

Summary

An ESB, BPM and API can maximize their enterprise roles by accelerating the delivery of mission-critical applications empowered by good and consistent master data, reference data—and their associated hierarchies and relationships.

The good news? Companies are increasingly viewing MDM's trusted data as a baseline requirement for any successful process improvement initiative. Once business conceptually ties superior data quality to process-driven improvement, the reason to buy MDM in order to support integration's major enterprise role becomes all that much clearer.

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