Realizing the Full Potential of MDM

SOLUTION
MDM Augmented with Data Virtualization

INDUSTRY
Applicable to all Industries

WEBSITE
www.denodo.com

PRODUCT OVERVIEW
The Denodo Platform offers the broadest access to structured and unstructured data residing in enterprise, big data, and cloud sources, in both batch and real-time, exceeding the performance needs of data-intensive organizations for both analytical and operational use cases, delivered in a much shorter timeframe than traditional data integration tools.

MDM implementations require substantial investments in not only time and money, but also in hardware, physical space, and resources. Unfortunately, many companies that have already made these investments are unable to unlock the full potential of their customer, product, supplier and other data, once mastered. This is not because of any strategic weakness of MDM, but because MDM systems focus on two core functions, which they perform exceptionally well:

A single view of the customer, product, or supplier. This is the ability for a company to know that "Jon Smith," and "Jonathan Smith," are the same person, and the company gains this knowledge because the MDM establishes a single golden record for each master entity. A single view is the essential ingredient of all MDM systems, and this is normally the first step in a company's implementation of any MDM system.

A 360° view of the relationships. In this view, in addition to a single view of the master entity, the MDM system also includes a view of the hierarchical connections between each customer and their family members, or suppliers and the products they supply. However, these connections are limited only to other master entities stored within the MDM system.

There is a third, even more expanded view of the master entity, and this is **a complete view into all transactions and interactions of those customers, suppliers and products**. Such transactions include not only purchases, but calls to tech support or customer service, trouble tickets the customer or supplier issued, and even the number of times, and in what context, the customer or supplier interacted with the company over social media.

Note that it is not possible to gain this complete view of the customer, supplier or product using MDM alone, because MDM systems are not designed to accommodate transactional data. To gain the complete view of the customer, supplier, or product, companies must augment MDM systems with an additional solution designed to incorporate transactional data from myriad sources. This solution, called data virtualization, combines the master data from the MDM with the associated transactions and interactions from other systems to provide the complete view. With such universal knowledge, service personnel can provide efficient services to their customers and suppliers.

Impediments to Gaining the Complete View

Incorporating transactional data from myriad sources is a particularly difficult challenge for many companies. Often, these sources are highly diverse, mixing legacy with modern systems, on-premise with cloud sources, and highly structured databases with raw text, stored in flat files. Some sources can be accessed relatively quickly, whereas others can only deliver their data in scheduled batches, whose ETL processes were scripted to "once every two days." Transactional data, by its very nature, can change by the minute.

Data Virtualization and MDM

Data virtualization is a technology that, when added to an MDM system, can provide the complete, fully expanded view of the customer, including all of his or her pertinent transactions, in real time.

Data virtualization does not replicate any data; it leaves all of the data exactly where it is, stored across myriad sources. Instead, it establishes an intelligent virtualization layer above the various sources, which contains the meta-data required to access each source, and it provides a virtual, real-time view of the data, as if it were all stored in a single repository, and as if it were all stored in the same schema and format. Stakeholders and applications can always query the entire data set, for a comprehensive view into all the data.

The virtual data set includes not only structured data, but also highly unstructured data, because all the necessary manual reconciliation steps have been automated. And because no data is replicated, stakeholders do not have to wait for any data to be delivered as part of a batch-oriented process; the virtualization layer goes directly to each applicable source. The virtualization layer combines the virtual data set with data from the MDM, and makes all of the data, together, available across the enterprise in real time.

Three Architectural Patterns

Data virtualization is a very flexible technology, which can be deployed within a variety of architectures to suit a variety of needs. Here are three, which illustrate the most common use cases.

Pattern 1: Analytical Focus

The most common way to enhance MDM systems with data virtualization is to do so in support of compliance reporting for the financial and other industries. In this scenario, the MDM draws master data from the disparate data sources, reconciles discrepancies, and creates golden records. The data warehouse draws transactional data from a similar range of transactional sources.

The data virtualization layer combines the master data with the transactional data from the data warehouse. In addition, it combines all of this data with any other pertinent sources across the enterprise, and it does so without replication. This results in a complete view of the customer for all data consumers, with a focus on analytics and reporting.
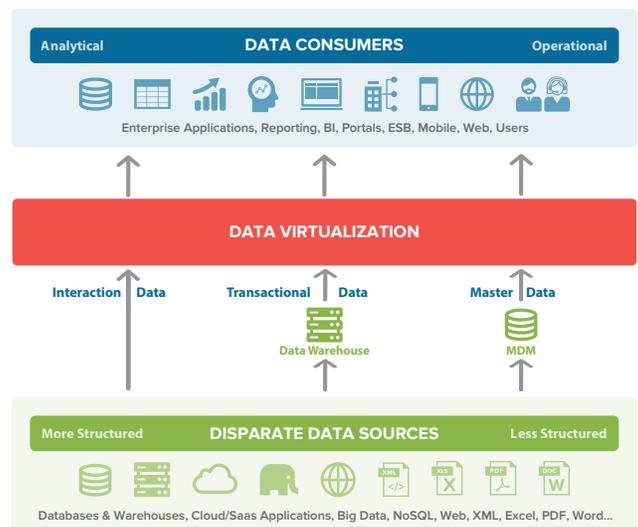

Figure 1 - Data Virtualization and MDM: Analytical Focus

Pattern 2: Operational Focus

Data virtualization can also enhance MDM systems to support call centers and other operational teams.

In this scenario, there is no data warehouse, as the data does not need to be stored for historical or analytical purposes. Instead, the virtualization layer combines data from the MDM with data drawn directly from transactional systems. Again, the virtualization layer can then combine this data with any other sources throughout the enterprise, without replication, and this creates a complete view of the customer, this time with a focus on operational efficiency.
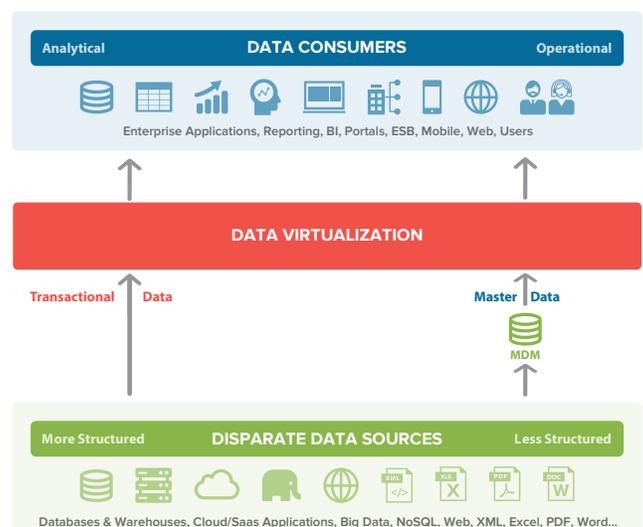

Figure 2 - Data Virtualization and MDM: Operational Focus

Pattern 3: Virtual MDM

Traditional MDM systems, which store the golden records in a separate database, often cannot be used in industries with heavy restrictions on data replication, such as healthcare and the public sector. In such cases, the virtualization layer itself provides many of the functions of a traditional MDM system, while also creating a virtual view of the transactional data across myriad sources, as in the operationally focused architecture.

For heavily regulated industries or any situation in which any form of replication is heavily restricted, Virtual MDM offers a powerful alternative to traditional MDM systems. Virtual MDM offers fundamental MDM capabilities and, as it can also combine the master data with transactional data and other sources across the enterprise, virtual MDM is capable of delivering a complete view of customer interactions, in real time, without storing golden records in a separate database. Virtual MDM also has the benefit of being able to be implemented in weeks instead of years, and at afraction of the cost of traditional MDM systems.
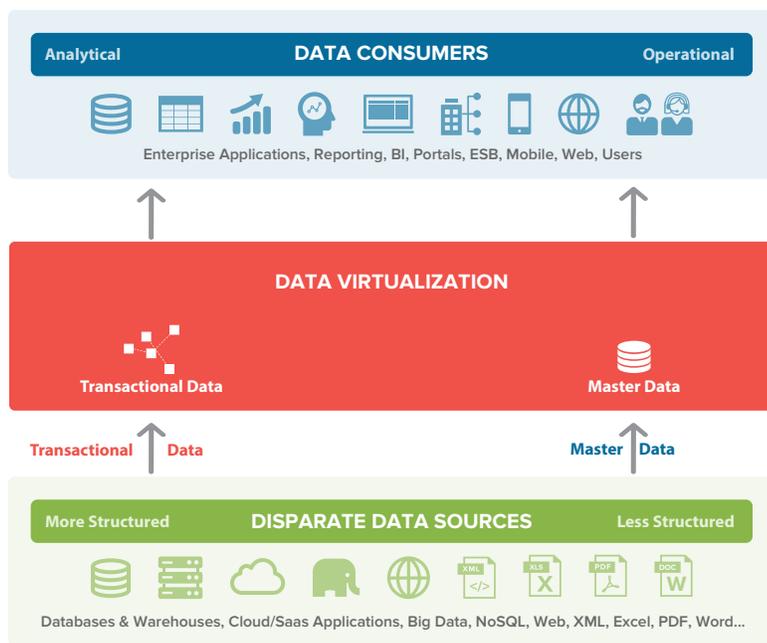

Figure 3 - Virtual MDM

MDM Augmented with Data Virtualization: Benefits

- **A complete view of the customer**, including a single view of the customer, a 360° view of customer relationships, and a complete view of customer interactions.

- **The ability to combine master data with any other data** throughout the enterprise; data virtualization can connect to MDM and other data sources.

- **Real-time data access** to the complete customer view, for any individual or organization across the enterprise.

- **Reduced replication** and its associated costs and risks. Data virtualization provides access to the data without replicating it.

- **A short implementation timeframe**; a robust data virtualization layer can be developed and deployed in a matter of weeks.
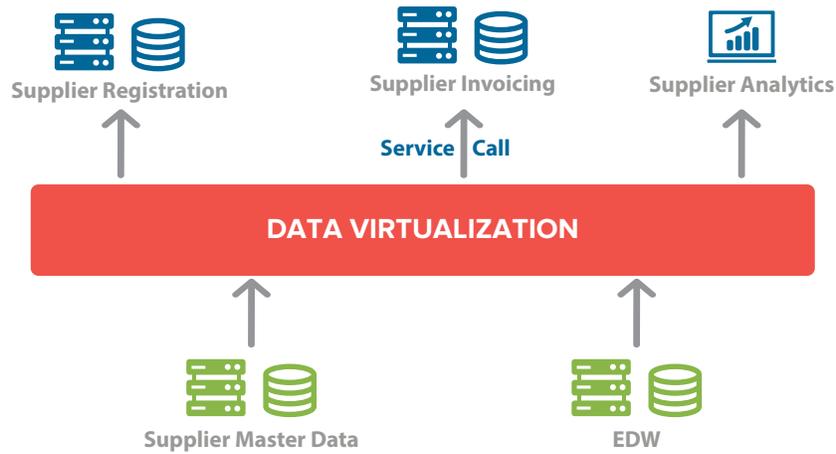
Case Studies

Analytical Focus: A Major Chip Manufacturer

This company needs supplier master data along with the related transactions to initiate many important business processes, such as supplier registration, invoicing, and analytics. The data is consumed by more than 70 applications. Unfortunately, it took an average of four-and-a-half weeks for the company to build the web services to these business processes, largely due to the time required for manually coding the data services, which required the work of highly skilled programmers.

The company used the Denodo Platform to build a virtualization layer, acting as a data services layer, for access to the supplier master data and many other sources. The data virtualization layer also made it easier for the company to provide a variety of web services for different consumers of the supplier master data, ensuring that each consuming application would receive the data it needed, and in the proper format.

With the data virtualization layer in place, the company was able to initiate the same business processes in a single day, greatly reducing the project backlog. And due to the web services that the data virtualization layer enabled, the company was able to provide access to the data without requiring the intervention of skilled programmers.
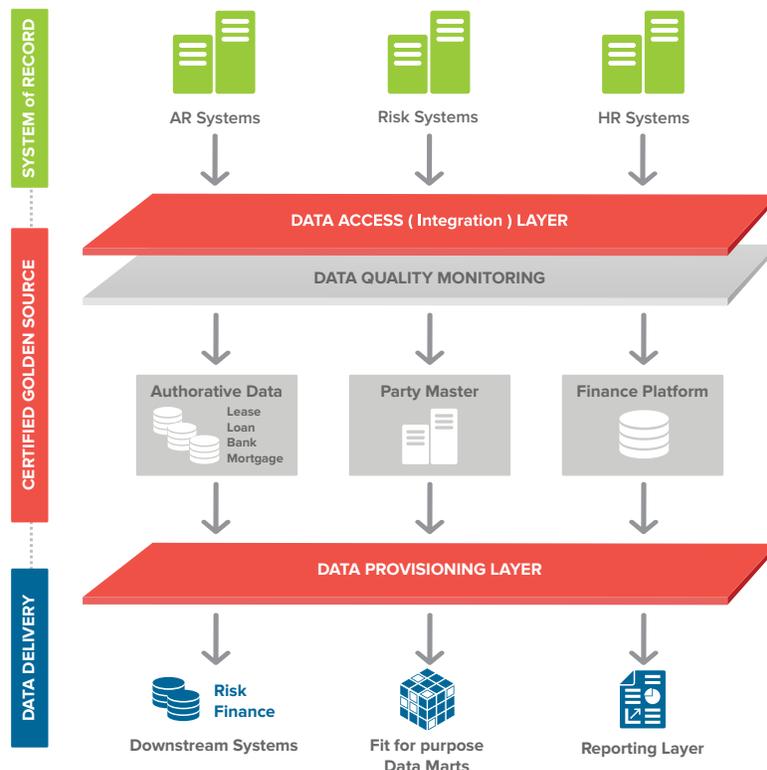
Operational Focus: CIT

CIT became a Systemically Important Financial Institution (SIFI) or "too big to fail" bank after they acquired a large retail bank. They needed a controlled data environment to support the intense regulatory scrutiny. In the legacy architecture, the consumers were pulling data directly from the sources systems. To avoid this problem, CIT needed a common data access layer to link across various silos. They also needed smart data governance to ensure that the stewards are accountable for their data and manage the data and its quality efficiently.

A Data Services Layer (DSL) integrates master data with transactional data and becomes a common provisioning point from which to access all authoritative sources of data. Data virtualization is core to this layer helping abstract the data from the sources and presenting it to consuming applications through a unified interface. Denodo Platform for data virtualization provides these key capabilities within the DSL for the management and movement of data within the controlled data environment.

With the Denodo Platform for data virtualization, CIT built a modern data architecture that became the common provisioning point for all of CIT's master and transactional data instead of the legacy point-to-point integration. This helped CIT achieve faster time-to-market as well as minimize data replication and proliferation. Also, the Denodo Platform enables smart data governance through enforcement of policies, standards, and procedures, and capabilities such as efficient data lineage, metadata management, and monitoring of data quality before consumption.
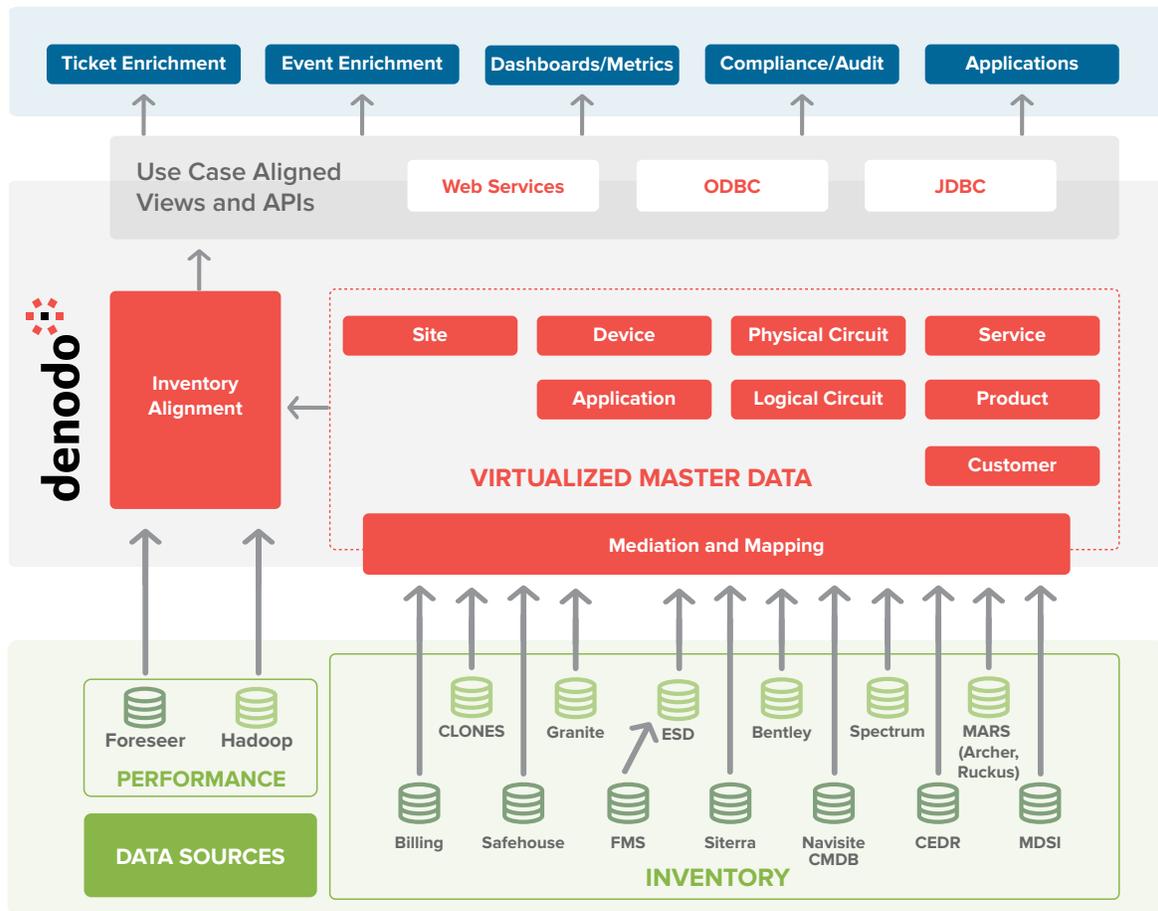
Virtual MDM: A Large US Telecom Company

The cable company had to meet a number of strategic and tactical requirements, including providing inventory data for ticket and event enrichment, dashboards, metrics, compliance and audit, performance data inventory alignment and inventory awareness to internal and external applications.

The company's business users needed a single view of virtualized master data information consisting of networking devices, customer data, site information, product information and service information combined with performance information.

The company implemented the logical inventory management system by first building a virtual canonical model consisting of master data elements from the disparate inventory sources. Master data views/elements were constructed using the Denodo Platform that served as a virtual MDM.

About Denodo

Denodo is the leader in data virtualization providing agile, high performance data integration and data abstraction across the broadest range of enterprise, cloud, big data and unstructured data sources, and real-time data services at half the cost of traditional approaches. Denodo's customers across every major industry have gained significant business agility and ROI.

For more information, visit www.denodo.com or call +1 877 556 2531 / +44 (0) 20 7869 8053.