Understanding the role of Data Management in building the Zero Latency Enterprise

Abstract:

Organizations that look to quicken the pace of their decision-making must actively look for and eliminate waste across all their operations. One of the most pervasive forms of waste is poor quality of master data used in transactions and reporting. By adopting the discipline of Master Data Management and its application-specific variation called Application Data Management, companies can govern their data efficiently, thereby setting themselves on course to become Zero Latency Enterprises.

The Zero Latency Enterprise (ZLE)

Today's rapid rate of business change makes it imperative that Organizations operate as highly responsive, agile enterprises. Key to realizing business agility is in understanding the notion of latency and working relentlessly to reduce its impact on business operations. In the business context, latency can be described as the time required for a relevant business event to complete and for the results of this event to be propagated to all interested consumers of this information. Latency, in the form of time spent for acquisition of complete, relevant and accurate contextual information and as waiting time by information consumers, is a category of waste that must be eliminated from all operations of the Enterprise to the extent feasible. This is applicable to the domain of physical supply chains that handle the flow of goods and materials to support manufacturing operations as well as to the abstract domain of information supply chains that are responsible for the lifecycle management of data within the organization.

For companies who look to wring out non-value adding wastes out of their physical and information management processes, the Zero Latency Enterprise (ZLE) is an ideal state to aspire for. As the name indicates, in a ZLE, such wastages of time latency are reduced to almost zero. In other words, current information is immediately available to all parts of the company where it is needed to enable adequate decisions to be taken.
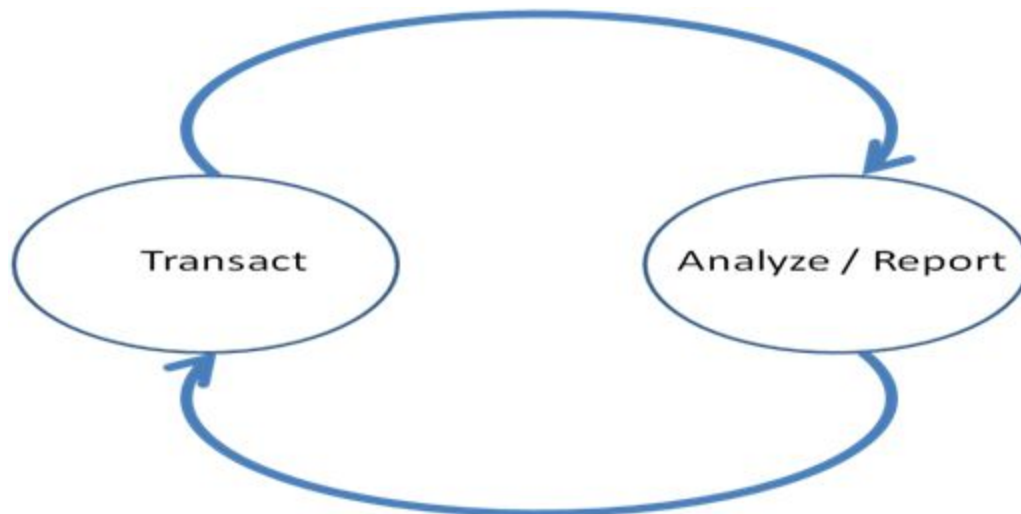
For a ZLE, closed loop operations imply eliminating the latency between transactional and analytical activities

In a closed loop business operation, transactional data captured in backend execution systems such as ERP/CRM etc is shared in near real time with downstream analytical applications such as Business Intelligence (BI) tools so that decisions can be made faster using accurate and timely operational data. Since the effectiveness of executive decision-making depends upon the quality of data available at hand, a key source of competitive advantage lies in how such data assets are managed.

Poor master data impacts the bottom line:

Without over-emphasizing the obvious, it is quite clear that numerous business initiatives rely on the presence of high quality master data to supply reliable, trust-worthy facts to support making key decisions. But master data handling in many organizations is in a state of mess. Due to the siloed nature of many IT systems and applications, master data is stored in multiple places in a redundant manner. This results in disparate data nomenclatures for the same entity, differing data structures and definitions, inconsistent use of rules to enforce business constraints etc. Poor quality of master data manifests in various forms:

- Master data is inaccurate
- Data is not logically valid
- Data is incomplete
- There are duplicate records pertaining to the same real world entity
- Data is not current or out-of-date and hence no longer relevant

When business processes use such error-ridden data to run their transactions, it results in magnifying and propagating these data deficiencies further into other parts of the Enterprise. This has a profound impact on the company's operational and financial results – shareholders lose confidence and market capitalization plummets, Executives begin to manage by instinct and gut feel rather than using facts, risking making poor decisions which further impact the top and bottom lines, supply chain partners lose trust and business relationships suffer.

Master Data Management:

Due to the growing awareness of the impacts of poor quality master data on the business bottom line, many companies have adopted a more disciplined approach to manage their information assets by employing solutions under the label of Master Data Management (MDM). There are two distinct perspectives to understand when considering an evaluation of potential MDM solutions.

1. First and foremost, master data management is a business concern which should be driven by business leadership with a strategic, corporate-wide focus. Hence, MDM is primarily a discipline with clear set of concepts that educate users on how to master their data throughout the course of its usage in the enterprise and its partners
2. MDM as a tool that offers features to automate the processes involved in lifecycle management of master data.

From a tool standpoint, MDM can be defined as the set of enabling technologies and solutions that are used to create and maintain consistent and accurate master data for all stakeholders across and beyond the enterprise.

What is an ideal MDM solution:

An ideal MDM solution would be one where:
- The MDM system owns 100% authorship of all the relevant data attributes that are needed by all the member applications in the organization.
- Master data is available to all consumers instantaneously, on demand without any additional efforts of data integration and other associated overheads

An MDM tool with the above-mentioned characteristics would indeed help to alleviate all the master data concerns in a cost-effective and efficient manner. However, the reality is that many such tools fall far short of achieving that ideal. And many business environments do not allow such theoretical applications to take root in their organizations.
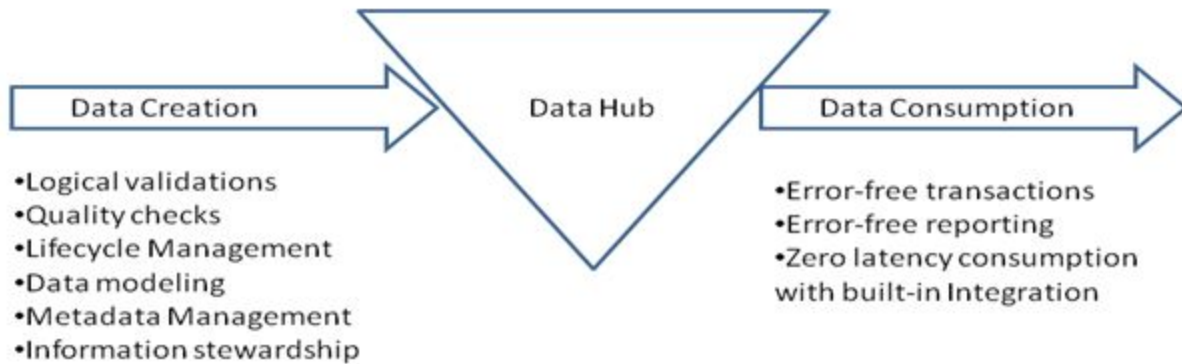
So, how do Organizations leverage the powerful concepts of MDM without being hit by the downsides of the MDM tools? In the absence of an ideal MDM solution, Organizations have to rely on a smarter variation of deploying the MDM tool, wherein a mission-critical application such as an ERP system drives the interest in and deployment of the MDM tool. Such solutions deliver required master data with zero latency, thus eliminating wastes in the information supply chain. This is where the discipline of Application Data Management (ADM) helps to deliver upon the potential of MDM.

Application Data Management: A refined form of MDM

Application Data Management (ADM) is a discipline akin to MDM but with a difference. In ADM, the scope under consideration is the specific application (or set of applications) for whom master data is being governed.

The ADM serves as a quality staging area for the master data needs of the specific application. In doing so, it functions as a decoupling point between the upstream data creation activities and the various downstream data consumers, thus maintaining a clear segregation of duties between data provisioning and consumption. What this does is enable all quality checks and balances to be defined centrally as business metadata which is then implemented consistently for all data records. On the consumption side, this removes the burden of trust on master data from the consumers and eliminates the need to build unnecessary validations of data before using them in the member application's functions.

ADM: Data de-coupling point

Data Creation → **Data Hub** → **Data Consumption**

Data Creation
- Logical validations
- Quality checks
- Lifecycle Management
- Data modeling
- Metadata Management
- Information stewardship

Data Consumption
- Error-free transactions
- Error-free reporting
- Zero latency consumption with built-in Integration

Apart from providing the data governance features of a generic MDM tool, the chief advantage of an ADM tool is that it is pre-integrated to seamlessly deliver the right information to the downstream consuming applications such as ERP. This eliminates the latency in provisioning high quality data to desired consumers.

An added dimension for ADM is that it is applicable for all data entities used in the business – both master data as well as transactional entities such as Invoices, Orders, Requisitions etc. Thus, within the scope of a single application, ADM is the umbrella under which all data is managed across its lifecycle of usage in the Organization.

Thus, ADM stays true to the spirit of MDM when it comes to managing master data for a given application while differing in the implementation of specific features made available in the tools.

Comparative assessment of MDM and ADM:

While both MDM and ADM support similar foundational concepts to manage the lifecycle of master data, the differences between them become visible when one observes the capabilities of the tools currently available in the market. The following table provides an assessment across different dimensions of the discipline of MDM and its refined version ADM.

Dimension	MDM	ADM
Scope of usage	Typically aims to become the supplier of high quality master data for several applications of the Organization	Tailor-made to deliver high quality master data to specific mission-critical applications

Scope of data	Master data across multiple domains such as Product, Customer, Location, Asset etc across their entire lifecycle of usage	Covers both master data as well as other transactional entities used in the applications
Data Authority & control	In many implementations, MDM and current applications both continue to maintain parts of master data. As more applications are involved, it becomes a maintenance nightmare to ensure the correct application of business and logical rules for data management consistently across all the applications and the MDM system	100% authoring of all master data attributes and relationships that are used by the specific applications. The member applications become consumers of master data, without any concerns for the quality of data being supplied. Data Governance is effectively enforced because of single source authoring.
Data provisioning	Different applications impose different latencies in the data consumption process as per their operating characteristics. MDM system has to support multiple modes of data consumption such as Batch, near real-time, data feeds etc using costly data integration tools. The MDM system has to be architected to handle various possibilities.	Pre-built integration with the intended consuming applications means that all master data is delivered for instantaneous usage without any overheads of data transformation and integration.
When best to use	When shared master data has to be harmonized across multiple applications which cannot be changed – at least in the short term - easily to work under a single Ownership model of master	When an Organization runs more than 80% of its operations on a mission-critical application system such as ERP and needs to get master data for this system absolutely

	data. True Enterprise MDM is a very long journey!	right at very low cost, without much time to waste.

Conclusion:

Organizations have to realize that the right MDM tools help to eliminate master data errors thereby playing an important role in reducing the time to respond to business challenges and opportunities. The more such wastes are reduced, the sooner the organization starts to behave as a Zero Latency Enterprise.

Hence, selection of the right MDM solutions becomes a very strategic business decision. When master data for a mission-critical backend application is concerned, current "generic" MDM tools are not engineered to deliver master data to the downstream application at zero latency. Because of this design limitation, Organizations incur additional cost and time overheads over the course of the lifecycle of use of application master data. An application-specific variation of MDM called Application Data Management helps to overcome such time delays and helps to lay the foundation for a lean and efficient information supply chain.

Organizations that run a significant majority (80% or more) of their operations on one or two mission-critical business applications such as ERP would be well-advised to avoid "generic" MDM tools that promise a lot but under-deliver and instead seek out more refined versions of MDM tools called ADM solutions that deliver a higher value proposition.