MDM for the Enterprise: Complementing and extending your Active Data Warehousing strategy

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You’ve never seen your business like this before.
Agenda

MDM and its importance

- Linking to the Active Data Warehousing Strategy
- Example Scenarios, Value and Conclusion
Master Data Examples and Importance

**Master Data**, also called "reference data," classifies business data (customers, vendors, product offerings, etc.) consistently across systems.

**MDM Risk Area: Store/Outlet identifiers**

- ✗ How many locations do we have?
- ✗ Which location or group of locations has the best or worst performance?

**MDM Risk Area: Product identification**

- ✗ What’s the revenue mix of Sundae flavors sold across all stores?

**MDM Risk Area: Poor product categorization**

- ✗ What percent of customers purchase dessert items?

**Master Data Management** (MDM) refers to methods by which clean & consistent reference data is managed, referenced, and synchronized across the enterprise.
Master Data Examples and Importance

**Master Data**, also called “reference data,” classifies business data (customers, vendors, product offerings, etc.) consistently across systems.

**MDM Risk Area:**
**Inconsistent customer identifiers**
- ✗ What’s the full picture of each customer’s ‘value’?
- ✗ Does this include travel w/subsidiaries?

**MDM Risk Area:**
**Inconsistent product identification**
- ✗ Which seats are preferred by frequent flyers and should be reserved for them?

**MDM Risk Area:**
**Other categorization**
- ✗ How has travel in/out of certain airports changed over time?

**Master Data Management** (MDM) refers to methods by which clean & consistent reference data is managed, referenced, and synchronized across the enterprise.
What is needed for a successful Enterprise MDM solution

A good process

A good framework and solution components

A enterprise data repository & data model
Agenda

• MDM and its importance

Linking to the Active Data Warehousing Strategy

• Example Scenarios, Value and Conclusion
MDM relation to the Data Warehouse

- MDM is different from the DW but can complement it.
- Data Warehouses are moving to be more active and operational to the needs of companies.
- There are common elements in terms of leverage:
  - Database technology
  - Data models
  - Quality
  - Governance
  - Integrations
  - Others..
Data Warehousing Trends: 
*Real-time Operational Intelligence*

**Strategic Planning Assumption:** By 2007, more than 50 percent of data warehouse implementations will operate as a "closed loop," feeding data back to source systems to tune and refine operational processes (0.7 probability).

Source: Gartner Business Intelligence and Data Warehousing Scenario: From Pressure to Performance Enterprise
MDM has been happening in bits and pieces within the DW for years

Figure 14. Based on 148 respondents.

...Hence, data warehousing and BI professionals tend to be combat-hardened veterans of master data management—though few of them use the term. Most see MDM and MDM-like practices as part and parcel of data warehousing’s individual layers, namely data integration, metadata management, data modeling, and report design. Whatever you call it, managing master data across the many layers of the technology stack is required for a deep and rich data warehouse.

Master Data Management: Consensus-Driven Data Definitions for Cross-Application Consistency. Philip Russom
And Data Warehouses overwhelmingly need this data repeatedly...

<table>
<thead>
<tr>
<th>Business initiatives</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business intelligence</td>
<td>82%</td>
</tr>
<tr>
<td>Data governance or data stewardship initiative</td>
<td>53%</td>
</tr>
<tr>
<td>Customer relationship management initiative</td>
<td>49%</td>
</tr>
<tr>
<td>Marketing initiatives (e.g., direct mail)</td>
<td>36%</td>
</tr>
<tr>
<td>Regulatory compliance</td>
<td>36%</td>
</tr>
<tr>
<td>Supply chain management</td>
<td>24%</td>
</tr>
<tr>
<td>Purchasing/sourcing</td>
<td>15%</td>
</tr>
<tr>
<td>Not linked; MDM is autonomous</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
</tr>
</tbody>
</table>

*Figure 8. Based on 453 responses from 148 respondents.*

<table>
<thead>
<tr>
<th>Technical solutions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data warehousing</td>
<td>85%</td>
</tr>
<tr>
<td>Customer data integration</td>
<td>63%</td>
</tr>
<tr>
<td>Transactional applications and databases</td>
<td>49%</td>
</tr>
<tr>
<td>Product information management</td>
<td>47%</td>
</tr>
<tr>
<td>Supplier information management</td>
<td>20%</td>
</tr>
<tr>
<td>Not linked; MDM is autonomous</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Figure 9. Based on 403 responses from 148 respondents.*
Some Existing DW Customers Do pieces of MDM Today!

- Existing DW customers do some type of MDM today – maintaining a subset of master data for analytical purposes
- Problem is,
  > Process is fragmented, complex and incomplete
  > No workflow, no reuse of common services etc.
The next generation of solutions

Now we have tools that allow the management of Master Data in a more holistic and organized way. These solutions can support both the analytical as well as the operational requirements.

- Workflow driven
- Support 3rd party services like Data Quality, external Content providers etc. if required
- Flexible
- Support your operational systems as needed
- Jump start with a set of common MDM services
- Leverage existing TD infrastructure
- Use Integration Technologies like EAI/ETL
Why do you need more than just functional capability?
Teradata MDM solution assets

- **TD MDM Platform**
  - Core MDM Services
  - Process Modeling
  - Business rules definition
  - Hierarchy Management
  - Others...

- **TD Database Tech.**
  - Scalability
  - Performance....

- **TD Active DW utilities**
  - Active Workload Mngt.
  - Active Data Loads

- **TD LDMs**
  - Retail, Manufacturing, Telcom, Financial etc.

- **TD Warehouse Miner**
  - Profiling
  - Data Quality
Teradata Database capabilities are still the common foundation

**Automated Data Management**
- Variable block file system
- Intelligent disk cache
- Row hash
- Partitioned primary index
- Multi-value compression
- Large object storage

**Performance Optimization**
- Teradata optimizer
- Compiled expression
- High performance algorithms
- Query flexibility
- High performance views
- Aggregate join index
- Schema flexibility
- Ordered analytic functions
- Statistical analytic functions

**Scalability and Parallelism**
- MPP architecture
- Bynet interconnect
- Scalable system management
- Shared nothing architecture

**Workload Management**
- Teradata Active System Management
- Automating workload management
- Priority scheduling
- CPU scheduling by priorities

**Availability & Reliability**
- Built-in redundant features
- Hot swap features
- Hot stand-by node
- Fallback
- Automated failover process migration
And the “Active” features of the Warehouse can be utilized if needed

**Active Load**
Intra-day data acquisition; Mini-batch to near-real-time (NRT) trickle data feeds measured in minutes or seconds

**Active Access**
Front-Line operational decisions or services supported by NRT access; Service Level Agreements of 5 seconds or less

**Active Events**
Proactive monitoring of business activity initiating intelligent actions based on rules and context; to systems or users supporting an operational business process

**Active Workload Management**
Dynamically manage system resources for optimum performance and resource utilization supporting a mixed-workload environment

**Active Enterprise Integration**
Integration into the Enterprise Architecture for delivery of intelligent decisioning services

**Active Availability**
Business Continuity to support the requirements of the business (up to 7X24)
Leverage in the various service and consulting domains

<table>
<thead>
<tr>
<th>Data Modeling</th>
<th>MDM</th>
<th>EDW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Modeling</td>
<td>Data models for MDM and EDW can be based off the same Enterprise Data Model. The output of MDM can be part of the core tables of EDW.</td>
<td>Data Model is a key component of the EDW, consisting of logical, physical and semantic models.</td>
</tr>
<tr>
<td>Data Integration</td>
<td>Facilitates the integration and movement of data from source systems to target systems, and leverages EAI or ETL processes.</td>
<td>Requires the same level of integration to other systems. If used in conjunction with MDM, the data flows from MDM to EDW are simplified greatly.</td>
</tr>
<tr>
<td>Data Quality</td>
<td>MDM ensures that Master Data is clean, consistent and accurate. Data Stewardship role as part of Governance is an important enabler.</td>
<td>Quality data is a necessity for a successful EDW. Need Transaction data in addition to Master Data.</td>
</tr>
<tr>
<td>Metadata</td>
<td>Metadata capability ensures transparency between Business and IT users.</td>
<td>A comprehensive metadata view is important to support EDW. Lineage and audit capability is required, as is impact analysis to data entities and business rules.</td>
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</table>
Thus...MDM Enables more *Accurate* Active Enterprise Intelligence

**STRATEGIC INTELLIGENCE**

- Which vendors contribute the least to profit?
- Am I sure that I am seeing all my vendor division’s spend accurately?
- Am I sure that I am rolling up my Product Revenues correctly?
- Target customers to acquire? Retain? At what cost?

**OPERATIONAL INTELLIGENCE**

- Expedite overnight for 10:00 a.m. delivery?
- Is the new promo driving sales this morning?
- Do I give this customer a discount?
- Am I sure that I am sending the promo to the right address?
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Example Scenarios, Value and Conclusion
The value of an unified view
E.g. To Provide Enterprise Risk Analytics

- MDM Provides Traceability, Governance & Hierarchy Management to the Reference Data
- This can then be used in conjunction with the transactional history to compute the Risk Analytics
The consolidation scenario:
Value of moving from multiple silos to an Enterprise view

By merging the MDM data from multiple sources, and multiple subject areas onto a single platform, you can retain the functional capabilities of the originals while broadening the business value to other areas of the organization.

FROM current multi-hub local based approach

TO a centralized integrated Approach
Overall Value of a common platform to the Enterprise

- Customers can choose an enterprise wide data model which represents their business
- **Single reference version of the data** which is clean, accurate
- Cost Savings – no separate MDM infrastructure needed, no separate integration components, no separate platform to manage, leverages existing investment in EDW to make it fault tolerant and highly available
- **Prevents MDM platform proliferation** – i.e., customer master data repository, financial master data repository....
- Integration – existing ADW integration methods can be leveraged and/or ETL/EAI tools can be used
- **Master Data Analysis** – not only can the master data be synchronized across the enterprise, but changes or trends in the master data can be analyzed, without moving it, and without a need for a separate platform
- **Skill Sets** – Existing data management and integration skills exist within the EDW environment. These can jump start the process
Conclusions

> Inconsistent Master Data causes errors and delays in both enterprise analytics as well as operational systems
> It’s an enterprise data management problem – build on infrastructure & skills already in place
> You can extend a leverage your investment in the Active Warehouse
> Plan for the long term while starting out with a single data asset if necessary

“Reliable master data is critical because it feeds both transactional systems that run business operations as well as reporting and analytics systems that provide information about the business. MDM allows a company to synchronize master data across multiple instances of an enterprise application, coordinate master data during application migrations, and support compliance and performance management reporting across analytic systems. Teradata’s approach to managing master data introduces a significant new capability to their EDW. Teradata has made the right move at the right time.” - Henry Morris, Senior Analyst, IDC, 8/3/2006