

Practical Approach for Master Data Management

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Abstract— Any organization typically has data on Customers, Financials (Chart of accounts, profits, Cost), Products, Business Partners (Suppliers, Distributors), Employees, Locations, Sales Contacts, Physical assets, Claims or Policies (Insurance). These data items or business entities are referred as Master Data. The process and technology involved in acquiring Master Data from multiple domains across enterprise and thereby maintaining a single consistent view is Master Data Management (MDM). MDM is getting popularity in Health & Life sciences, Medical Device Manufacturing, Financial Services, Insurance, Manufacturing & Technology, Retail, Consumer Packaged Goods, Telecommunications, Information services & Media, Aerospace, Defense and Government. The current article illustrates the technical solution to implement enterprise Master Data Management in domain specific companies.

Keywords- Master Data Management; Enterprise Master Data Management; MDM Technical Architecture; MCI; SOA.

I. INTRODUCTION

The business entities that are commonly considered under MDM are Customer (Customer Data Integration - CDI), Product (Product Information Management - PIM), Employee (Employee Information Management - EIM), Vendor (Vendor Information Management - VIM). This article briefs the need and approach for building Customer Data Integration in large Enterprise FS/banking industries based on Gartner recommendations on MCI/SOA and DW principles. Similar approach and technology can be applied to build PIM, EIM, VIM etc.

Customer information often changes over time. The factors that influence information changes are customer credentials, contacts details, customer demographic and geographic details.

“CDI is the combination of technology, processes and services need to create and maintain an accurate, timely and complete view of a customer across multiple channels, business lines and enterprises.” – Gartner

In an enterprise, customer information is often spread across internal or external applications, databases, spreadsheets, paper Etc. Further, different business units have different concepts and definitions for the same business entity(customer). A popular example for lack of integration between different business units within an enterprise is a scenario wherein a customer takes loan, unaware of the fact

that the customer already has a loan account, the marketing unit approach for a new loan offer.

II. SINGLE VIEW OF CUSTOMER

The common and unique entity among Commercial banks, Retail banks, Insurance companies, and Brokerage firms is Customer. Customer base always dictates the strength of the firm. Safeguarding (providing more services and protecting from fraud) customer both from internal and external perspective is the key essence of today’s market.

Keeping in view the complexity of all relationships with customer base and changes to customer information achieving a single customer view is vital. Banks often hold multiple records for one same customer scattered across multiple business units or divisions. This can be due to the multiple touch points that the customers face when dealing with the bank, by way of collecting data online(web), face to face(branch), over the phone(call center) Etc.,. In reality all the three touch points are different business units under the bank umbrella. The complexity increases when customer has multiple accounts (Checking, Loan, Credit Card, Insurance, and Savings). With a single customer view, Bank can deliver a seamless, real-time, cross-organizational (Business Unit) transaction flow so that they can tailor special premium service packages to their best customers, as well as unify policies and determine which services a given customer receives within the enterprise. Packaged services can be provided to prospective customers. For example, two different financial firms providing single face to customer with new premium services. Unless and otherwise a single true customer data is maintained by the firms this can’t be achieved.

A single customer view provide a better understanding of each individual customer and their relationship with the bank, which helps reducing costs, customer analytics and business intelligence to reduce the risk of fraud, dispute resolution, and increase revenue and profitability in customer-centric Banks.

III. GOLDEN RECORD

The term Golden record refers to the “single truth” or “single customer view” which is an authoritative customer record that has usually been generated by extracting, cleansing the data from multiple channels of enterprise.

IV. SOLUTION ARCHITECTURE TO BUILD ENTERPRISE MDM

Enterprise MDM typically involve three layers namely Multi Channel Integration (MCI), Enterprise MDM Hub (MDM) and Enterprise Data Warehouse(EDW).

A. Multi-Channel Integration (MCI)

MCI is the information provider to MDM and EDW is the consumer. Multi-Channel Integration involves extraction of various master data namely Customer, Product, Employee, Vendor from multiple operational data sources.

SOA involves building of Services or Service Components specific to business channels. Based on business needs and the dynamism of the customer data, data integration can be structured either by using batch processing or using real-time messaging thru Enterprise Service Bus (ESB). Every business unit within an enterprise is distinct. And Services are usually built to address a particular functionality of a business unit. Services are loosely coupled and are independent of hardware. The SOA advantages are changes to one services will not affect other Business units and also the CDI services can be leveraged by other applications. Gartner recommends SOA based approach for MCI processing.

Extraction, Transformation & Loading Process (ETL)

ETL is a standard Data warehousing technique to extract, profile, cleanse & integrate the data from multiple sources.

Data Extraction: Involves data acquisition from multiple sources/channels within the enterprise and staging in a single repository. Extraction can be either real time or trickle or nightly batch process.

Data Profiling: Detailed studies of source data (Data Profiling) need to be performed to understand the data format, characteristics, pattern, usability and standard unit of measurement and granularity.

Data Cleansing: Cleanse, Standardize and augment the data, removing duplicates, supply missing data, and handle data quality issues per business needs.

Data Integration: Data will be transformed and integrated to produce the true view of customer.

B. Enterprise MDM Hub

MDM hub is the central application that captures, integrates and distributes Master data. The customer data extracted from multiple operational sources thru MCI layers are stored in CDI repository (a single central location).The primary goal is to maintain golden records. The process involved in building golden records are Customer Identification , Rule based customer record matching, Identifying partial match/Matching process, De duping and Merge/ Un merge. CDI repository comprises of robust customer data model, designed to accommodate Customer, Customer Relationship (External customer, employee), Customer Household and Household details, customer demographic, psychographic and geographic details, Customer contacts (physical address, contact , Postal address, bill-to-address, ship-to-address, Electronic address (Personal, Office and Corporate email ID), Internal Customer Accounts Etc.

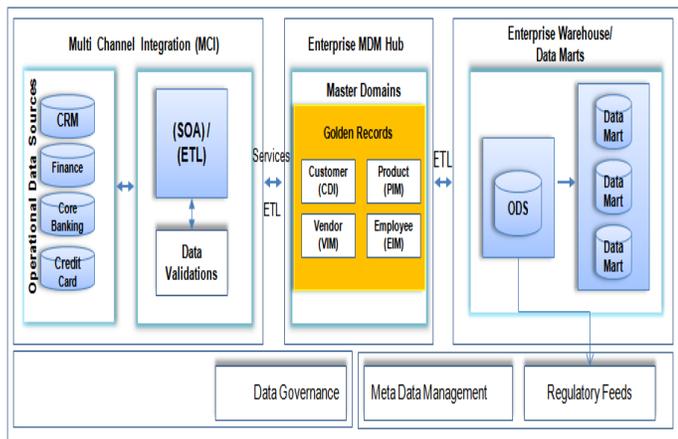


Figure 1: Enterprise MDM Architecture

MCI layer serves as integration gateway to communicate between multiple operational systems that produce master data and various consumers seeking refined or unique golden customer record. MCI can be implemented either by Data Warehousing or SOA technologies.

V. CONCLUSION

ETL: Robust ETL strategy needs to be built to extract the customer data from CDI data repository to multiple consuming systems. There are multiple ETL tools available to enable this feature.

Data Validation: Customer information will be integrated with external third-party customer data set (e.g., Dun & Bradstreet, Experian) and produce the integrated customer database with various data access views.

Data Governance: Data governance ensures that the controls, policy, process and audit mechanisms are in place for master data elements. It provides a framework to create a methodical approach toward managing the data across the enterprise.

Meta Data: Metadata is data about data. For every column of every table in the CDI hub there must be accurate data about where the value came from, what transformations were performed to get it into the hub data model format, what business rules were applied to it, and which applications receive updates to it. This is especially important in CDI because the business rules often determine which of several alternate values is used to populate a data element.

Regulatory Feeds: Downstream systems like Planning, Budgeting, Finance which need customer data for processing.

C. Enterprise Data Warehouse (EDW)

Depending upon the size of the organization, the consumers of master data vary. In a typical DW/BI scenario, the golden records from the MDM repository are extracted into Operation Data Store (ODS) more often called as enterprise warehouse and thereafter into Data Marts. Data Marts comprises of Dimensions, Facts & Confirmed Dimension tables. Customer Confirmed Dimension maintains the golden records.

Tools & Expertise:

Organizations should prepare to acquire the following technologies internally or thru vendors for implementing MDM.

Service Oriented Architecture (SOA)

Extraction Transformation & Loading (ETL)

MDM/CDI

Data Modeling

An effective enterprise MDM solution enables the organization to understand its customer, product, services, employee etc better and facilitates intelligent business decisions. MDM is a continual process. Organizations should strategize the MDM roadmap and implement in phases. Organization should analyze the business needs and choose the appropriate Solution, Tools and Technology.

REFERENCES

- [1] <http://tdwi.org/Articles/2009/08/01/Introduction-to-Operational-Data-Integration.aspx?Page=6> Philip Russom TDWI MDM Portal
- [2] <http://www.information-management.com/specialreports/20070419/1081667-1.html>
- [3] <http://www.google.com/images?um=1&hl=en&biw=1003&bih=587&tbs=isch%3A1&sa=1&q=MDM+CDI+ETL&btnG=Search&aq=f&aqi=&aql=&oq=>
- [4] www.gartner.com/it/.../master_data_management_brochure.pdf - Gartner Master Data Management .
- [5] www.gartner.com/it/content/1217700/.../mdm_summit_agenda.pdf - Gartner Master Data Management
- [6] www.gartner.com/it/content/851600/.../mdm_agenda_at_a_glance.pdf -
- [7] searchdatamanagement.techtarget.com/ - The Business Case for CDI/MDM in Healthcare
- [8] www.cigna.com/general/about/investor/release/4q04release.pdf ... Joanne Galimi, September 3, 2004,
- [9] www.gartner.com/AnalystBiography? ...
- [10] www.tcdii.com/PDF/CDI_Alert_V1_12_The_Business_Case_for_CDIMDM_in_Healthcare_Payers.pdf
- [11] www-01.ibm.com/software/data/master-data.../library.html - SAP Community Network Forums: SAP <http://www.stratature.com/portals/0/MSMDMRoadmap.pdf> ...
- [12] forums.sdn.sap.com/thread.jspa?threadID=617390 - Get more discussion results
- [13] www.siperian.com/ - Magic Quadrant for Master Data Management of Customer DataFile
- [14] static.businessreviewonline.com/.../Gartner-MQ-MDM-for-Customer-Data-2009.pdf - CDI-MDM Summit -
- [15] www.sourcemediaconferences.com/CDIFL07/pdf/CDI-MDMSummit-Spring2007.pdf
- [16] <http://www.information-management.com/specialreports/20070419/1081667-1.html>
- [17] www.ibm.com
- [18] www.oracle.com/master-data.../mdm-foundation-for-soa-white-paper.pdf
- [19] www.oracle.com/us/products/applications/master-data.../018877.pdf Oracle's Fusion of MDM and SOA (Oracle Master Data Management) Sep 24, 2010 ...
- [20] blogs.oracle.com/mdm/2010/.../oracles_fusion_of_mdm_and_soa.html -

[21] www.cioupdate.com/.../SOA-and-MDM-A-Match-Made-in-Heaven.htm >SOA needs MDM to help with the evolution of the information infrastructure. See The Role of Master Data Management

[22] blogs.gartner.com/.../when-is-soa-doa-when-its-without-mdm/ -MDM and SOA, a Strong Partnership < Hub Designs

[23]blog.hubdesigns.com/.../mdm-and-soa-a-strong-partnership/ - Advancing SOA and MDM — in Tandem – Informatica Perspectives Mar 17, 2009

[24] blogs.informatica.com/...php/.../advancing-soa-and-mdm-in-tandem/ - Master Data Management Meets SOA | SOA World Magazine Apr 29, 2007 ... MDM, however, typically doesn't embrace SOA's "loose coupling" principle. Extending MDM with loose coupling allows support for SOA's.

[25] soa.sys-con.com/node/366853 - How To Make MDM And SOA Better Together - Forrester Research Apr 24, 2008 ... Master data management (MDM) initiatives seek to deliver a single, trusted version of enterprise data, while service-oriented architecture ...

[26]www.forrester.com/Research/Document/0,7211,45734,00.htmlSOA and MDM: Two Integration Solutions That Go Great Together ...Mar 18, 2008.

[27]www.itbusinessedge.com/.../soa-and-mdm-two-integration-solutions-that-go-great-together/?

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