Introduction to Microsoft's Master Data Services (MDS)

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About me

- In IT for 28 years
- Worked as desktop/web/database developer, DBA, BI and DW architect, MDM, PDW
- Been perm, contractor, consultant, business owner
- MCSE for SQL Server 2012: Data Platform and BI
- SME for SQL Server 2012 certs
- *Currently a consultant working with MDS at Schlumberger as a MDM Technical Lead*
- Contributing writer for SQL Server Pro magazine
- Blog at JamesSerra.com

Agenda

➢ Do you need Master Data Management (MDM)?

➢ Why Master Data Management?

➢ MDM Scenarios & MDM Hub Architecture Styles

➢ Why Microsoft Data Services (MDS)?

➢ MDS Benefits and Key Features

➢ MDS UI and MDS Add-in for Excel

➢ Why Profisee Master Data Maestro?

➢ Demo

➢ QA

Do you need Master Data Management (MDM)?

- Do you have instances of invalid data impacting business processes?
- Do you wish your business users could manage data themselves such as Customer and Product?
- Do you have IT resources spending time on data fixes and/or managing hierarchy definitions for the business?
- Do you have the need for data consolidation and the subsequent dissemination of the consolidated data to other systems?
- Do you have an environment of heterogeneous systems which all could benefit from a single view of domain data such as Customer or Product?

- *Don't let it be an afterthought!*

Why Master Data Management?

- The technology, tools, and processes required to create and maintain consistent and accurate lists of master data
- Set of data objects that are at the center of business activities (Customers, Products, Cost Centers, Locations, Assets, Tasks …). Dimension data, NOT transactional data
- Single source for enterprise master and reference data
- Business-centric versus IT-centric
- Includes business process, people, AND data

Why Master Data Management (MDM)?

- IT/business partner provides data stewardship and data governance
- Reduces or eliminates duplicate data entry and maintenance
- Improves compliance, reporting, profitability, decision making and data quality
- Expand data management to data stewards responsible for the data

Master Data Management (MDM) Domains/Entities

People	Things	Places	Abstract
Customers	Products	Locations	Accounts
Vendors	Business Units	Stores	Warranties
Sales People	Bill of Materials	Wells	Time
Employees	Parts	Power Lines	Metrics
Partners	Storage Bins	Geo Areas	Securities
Patients	Equipment	Warehouses	Contracts

Master Data Management Solution Areas

Data Quality
- Human typographical errors; incomplete information; spreadsheet data management
- Mergers and consolidation; ERP implementations, consolidation or migration
- New purposes for old data; retire old applications such as mainframe applications
- Single point of data maintenance; BI reporting

Compliance
- Tracking spends by customer
- State and federal mandates

Improve Efficiency
- Different types of customer accounts
- Accurate view of data by implementing MDM and DQ
- Single point of data maintenance
- Cross sell and upsell

Retain Customers
- Single view of customer spend, channels, cross sell and upsell

M&A
- Merging chart of accounts; consolidate financial reporting
- Single view of product
- Single view of customers

Improve Decisions
- Bill-to and ship-to addresses and contacts
- Pricing levels based on spend
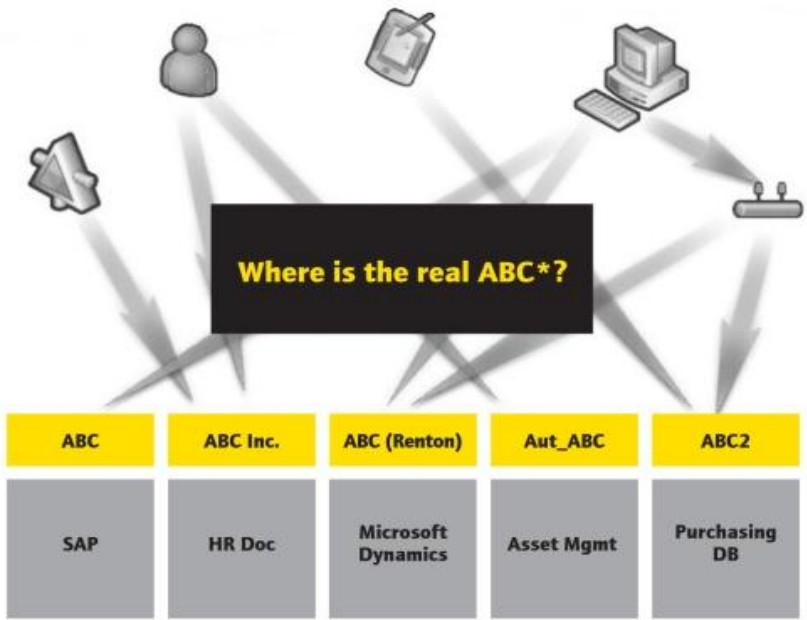- Relationships between buying customers (parent)

Cross Reference
- Cross reference of same customers across multiple systems
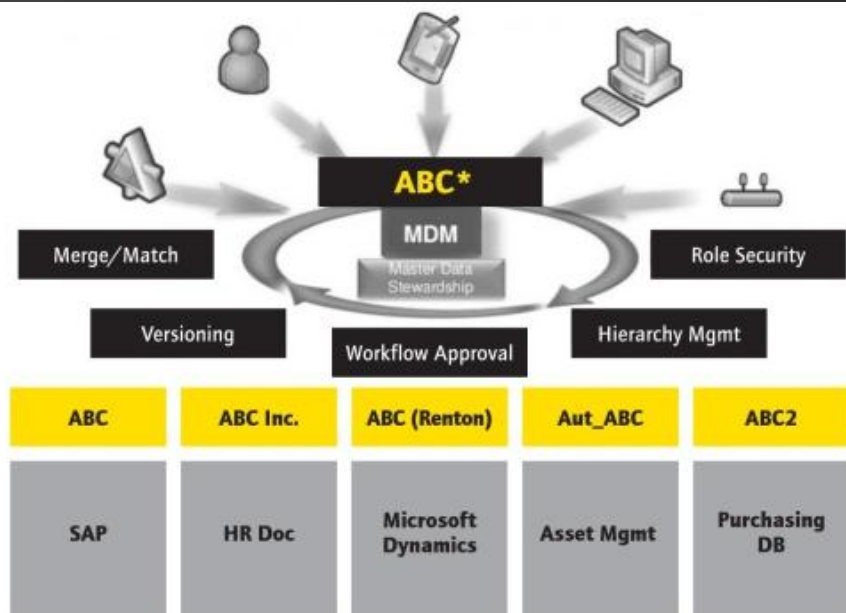- Survivorship of best consolidated data across multiple systems

Golden Records
- Single view of anything that has attributes that can be matched
- Cleanup of source systems with business rules and golden records pushed back

Before Master Data Management

Where is the real ABC*?

Golden Record Matching

After Master Data Management

The main scenarios that a MDM solution must address involve Data Solutions, Data Warehouse Management, and Data Management

Operational Data Management

Central data records management and consumption sourced by other operational systems

A company has adopted 6 new systems from a merger. The company needs the ability to propagate the correct customer information to each system in a consistent fashion. **MDS provides a platform for central schema, integration points and validation for Internal IT to develop a custom solution**

Data Warehouse Management (Analytical)

Enable business users to manage the dimensions and hierarchies of DW / Data Marts

Example: Business users utilize a data warehouse for reporting, but complain about the accuracy of the dimensions and lack of agility for updates. **MDS empowers the business users to manage dimensions themselves while IT can govern the changes**

Data Solutions

Provides storage and management of the objects and metadata used as the application knowledge

- **Object mappings**
- **Reference Data**
- **Metadata management**

Example: Table A houses mapping data between two systems, and is also utilized by ETL processes for data transformation decisions. **MDS enables business users to manage the object mapping**
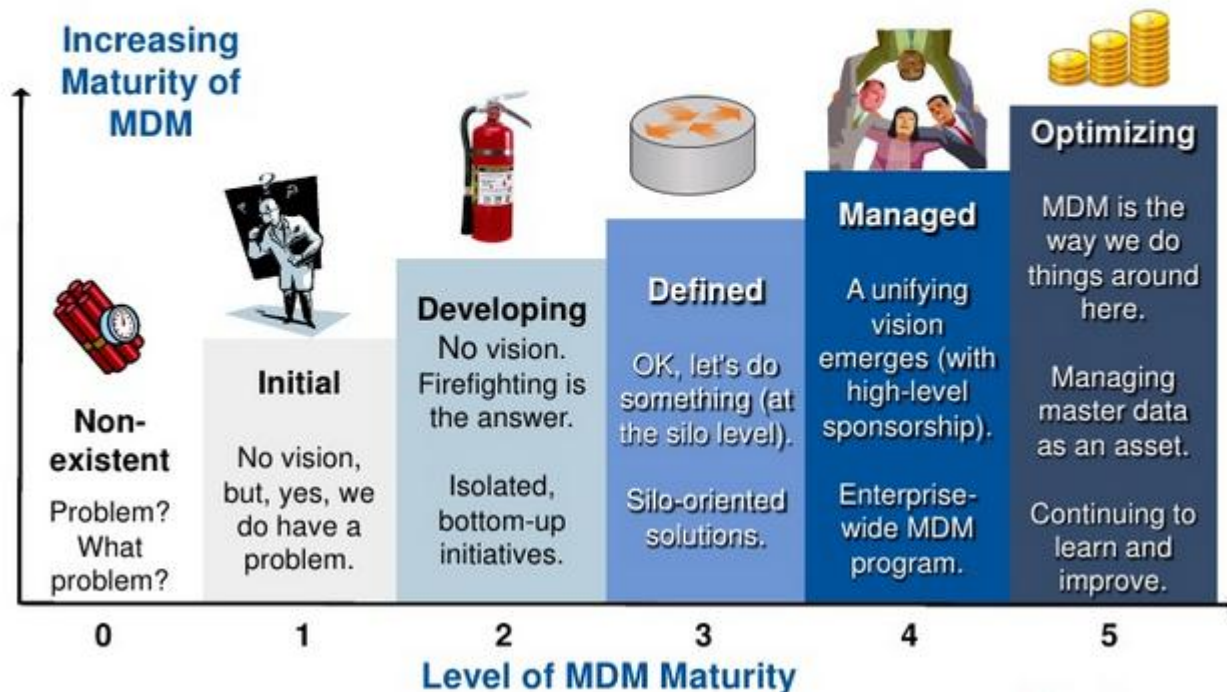
Where MDM fits in
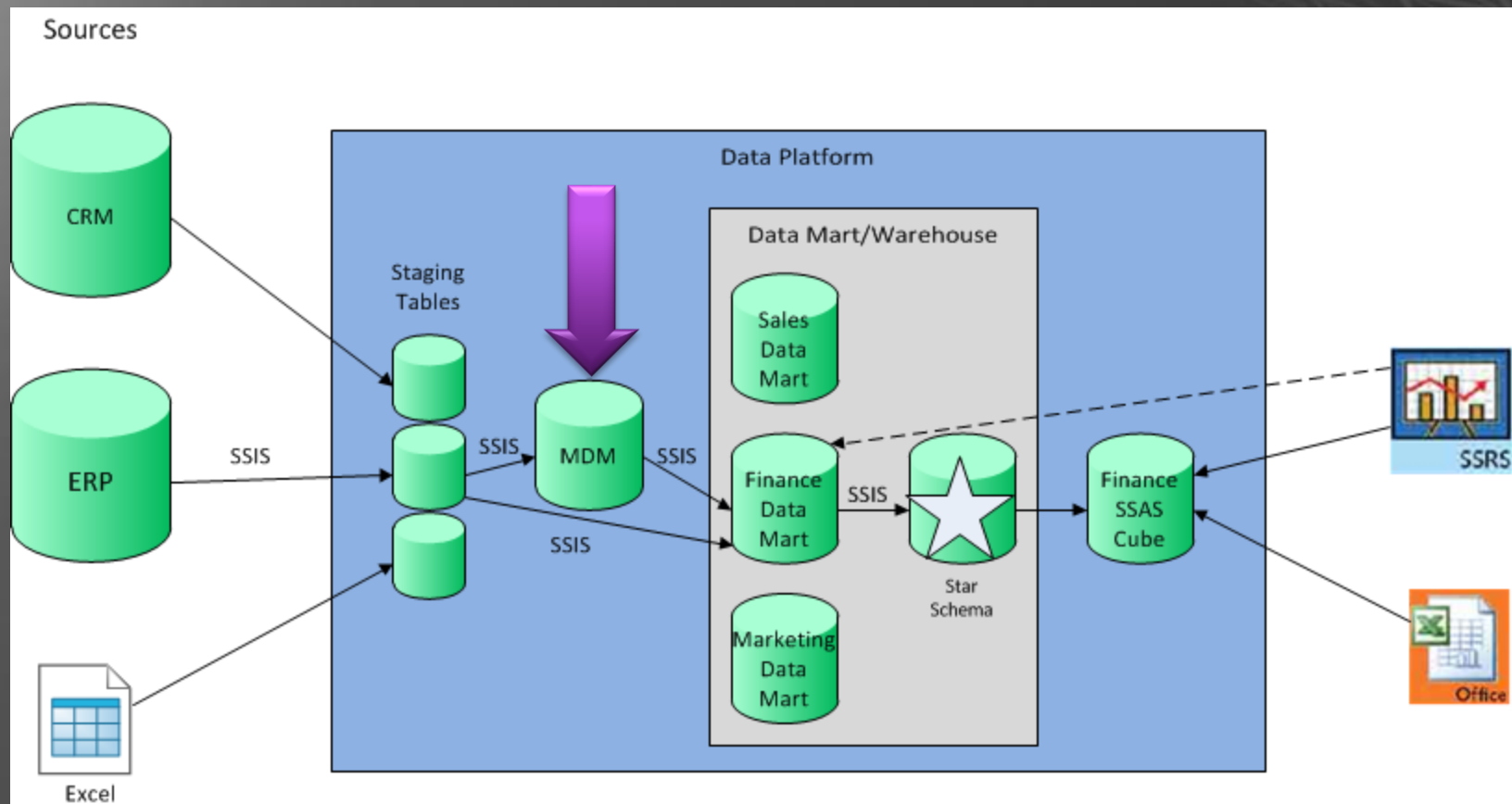
MDM Hub Architecture Styles

- System of Entry (SOE) – Primary point of data entry. This may be direct entry or through services that update the data in virtual real time

- System of Record (SOR) – Most, if not all systems, receive their data from this source. When conflicts arise, this system is considered primary

- Repository – All master data is stored in the MDM hub, making it the SOR and SOE. Source systems are rewritten to get their master data from the MDM hub

- Registry – Data stays in each source system (SOE). All source system data records are mapped in the master data registry (SOR)

- Hybrid – Source systems are SOE, but most important attributes are replicated to hub

MDM Maturity Model

MDM Maturity Model: Helps You Determine Your Current and "To Be" States

Increasing Maturity of MDM

Optimizing
MDM is the way we do things around here.

Managing master data as an asset.

Continuing to learn and improve.

Managed
A unifying vision emerges (with high-level sponsorship).

Enterprise-wide MDM program.

Defined
OK, let's do something (at the silo level).

Silo-oriented solutions.

Developing
No vision. Firefighting is the answer.

Isolated, bottom-up initiatives.

Initial
No vision, but, yes, we do have a problem.

Non-existent
Problem? What problem?

0   1   2   3   4   5

Level of MDM Maturity

Why Master Data Services (MDS)?

- Do you want to manually create your own solution or use a product?
- Part of SQL Server 2008 R2 (Enterprise+) and SQL Server 2012 (BI+)
- Fraction of the cost of competing MDM products from Oracle, SAP, Informatica and other niche vendors
- Superior hierarchy management with full audit of changes
- Strong business rules managed by business people
- Single security model
- SOA and web services layer, work flow, and versioning
- Short implementation times with big business impact

Master Data Services Benefits

- Align data across systems
  - Get a single version of the truth
  - Improve operational consistency
  - Improve reporting consistency
- Enable users to manage master data securely
  - Simplify the user experience with Web-based access
  - Reduce IT expense and process time by giving people direct and secure access to master data
  - Improve data quality across the enterprise
  - Flexibly add new data, systems and applications
- Ensure integrity of information
  - Manage critical hierarchies and master data attributes
  - Take advantage of comprehensive data cleansing
  - Be confident that data is accurate and up to date
  - Get more value from operational systems with authoritative data

Master Data Services Key Features

- Master data hub that provides central management of master data entities and hierarchies
- Thin-client stewardship portal that provides secure, role-based Web access to master data
- Versioning of all data entities and hierarchies
- Human workflow that notifies assigned owners by e-mail of business rule violations
- Flexible and extensible business rules that safeguard the quality of data entered in the master data hub
- Support for a broad range of hierarchy and attribute management strategies and requirements
- Comprehensive role-based security model that enables fine-grained, secure access to master data

Interacting with Master Data Services

- Master Data Manager Web User Interface
- MDS Web Services API (WCF API)
- Stored procedures in the MDS database
- MDM tables via T-SQL
- MDS Add-in for Excel

SSIS package that calls
MDS stored procedures:
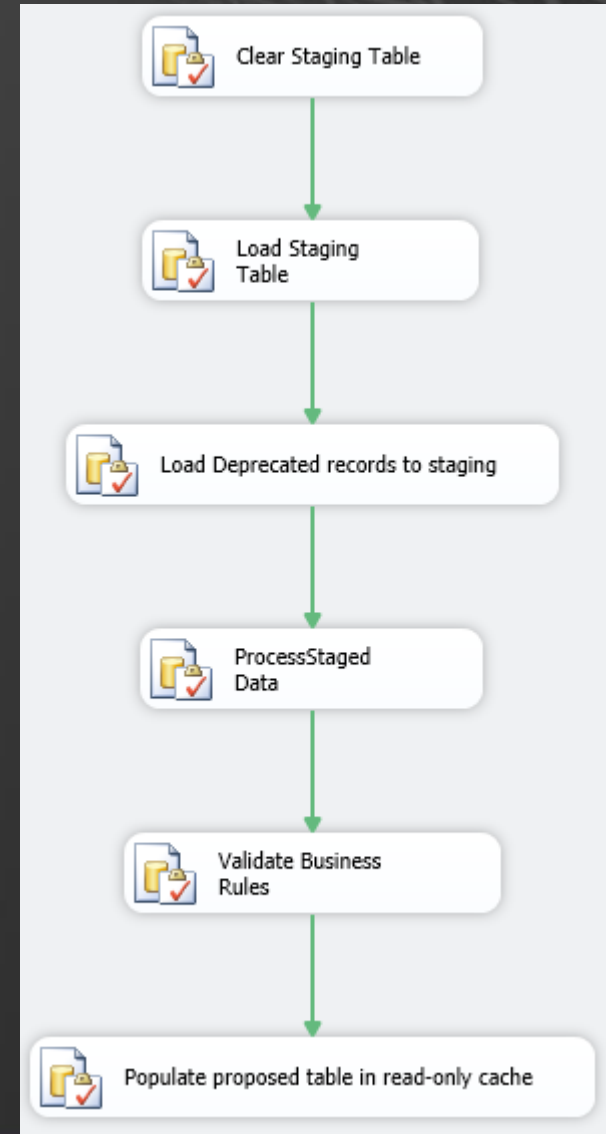
The basis of an MDS solution involves Models, Entities, and Attributes

► The model is the most fundamental object in a MDS solution
► Models are the containers that encapsulate all other MDS objects (i.e. entities, hierarchies, collections, and business rules)

Database Analogy	
MDS Object	**Database Object**
Model	Schema
Entity	DB Table
Attribute	Column within DB Table
Member	Data Row

Creating/Updating Models
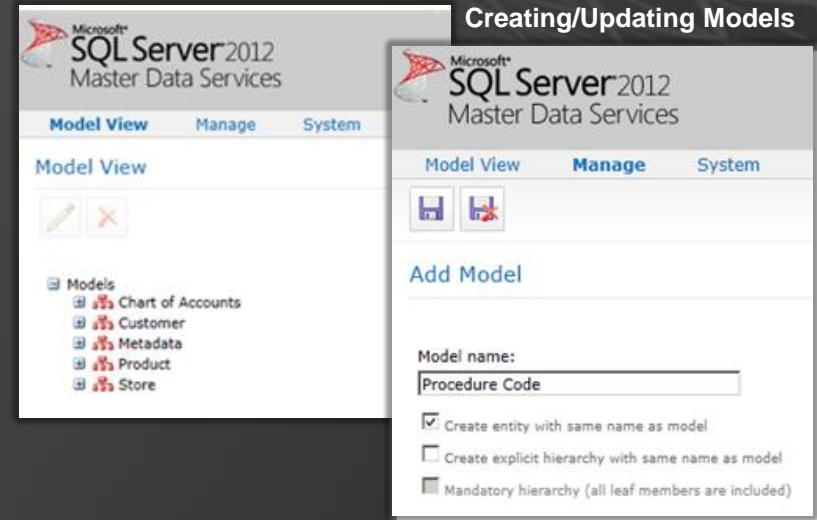
Creating/Updating Entities
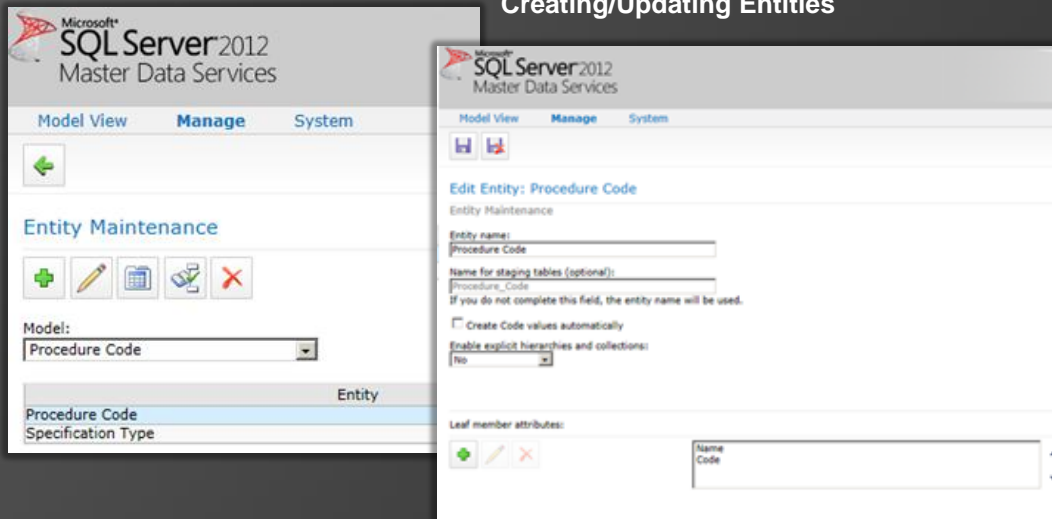
Creating/Updating Attributes

MDS Main Screen

Microsoft SQL Server 2012
Master Data Services
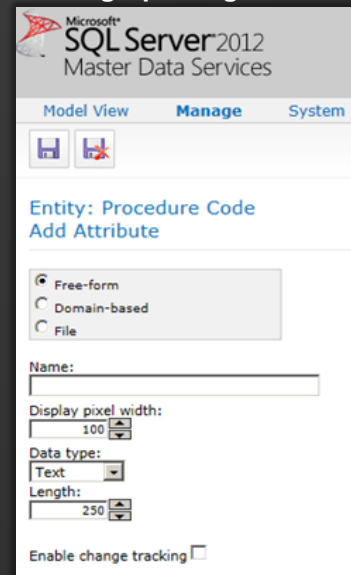
Information Worker Tasks

Business Users

Model:
Customer1

Version:
VERSION_1
Status: Open

Explorer
Work with master data and with hierarchy relationships.

Install Master Data Services Add-in for Microsoft Excel
- Users can load and bulk edit data.
- Administrators can load data, create entities, and update attributes.

Administrative Tasks

Technical Users

System Administration
Build the model structure, create business rules, and deploy model packages.

Integration Management
Import data into MDS and create SQL views for use by subscription systems.

Version Management
Create versions of master data.

User and Group Permissions
Assign permissions to master data.

MDS Add-in for Excel

- Utilizing the Web or Excel Add-in with MDS allows business and technical users the ability to utilize whichever environment they feel most comfortable with

- The Excel Add-in for MDS allows users all the same abilities with MDS that the Web UI offers

- Users can update and view MDS data, as well as modify or create MDS objects such as Models or Entities

- A major benefit of the Excel Add-in is the ability to quickly bulk load data into MDS

- The Excel Add-in provides users the ability to use Data Quality Services to clean data before it moves into MDS

MDS Capabilities

Modeling
Entities, Attributes, Hierarchies

Validation
Authoring business rules to ensure data correctness

Role-based Security and Transaction Annotation

MDS

Excel Add-In | Web UI

Master Data Stewardship

Data Matching (DQS Integrated)

Versioning

Enabling Integration & Sharing

Loading batched data through Staging Tables

Registering to changes through APIs

Consuming data through Subscription Views
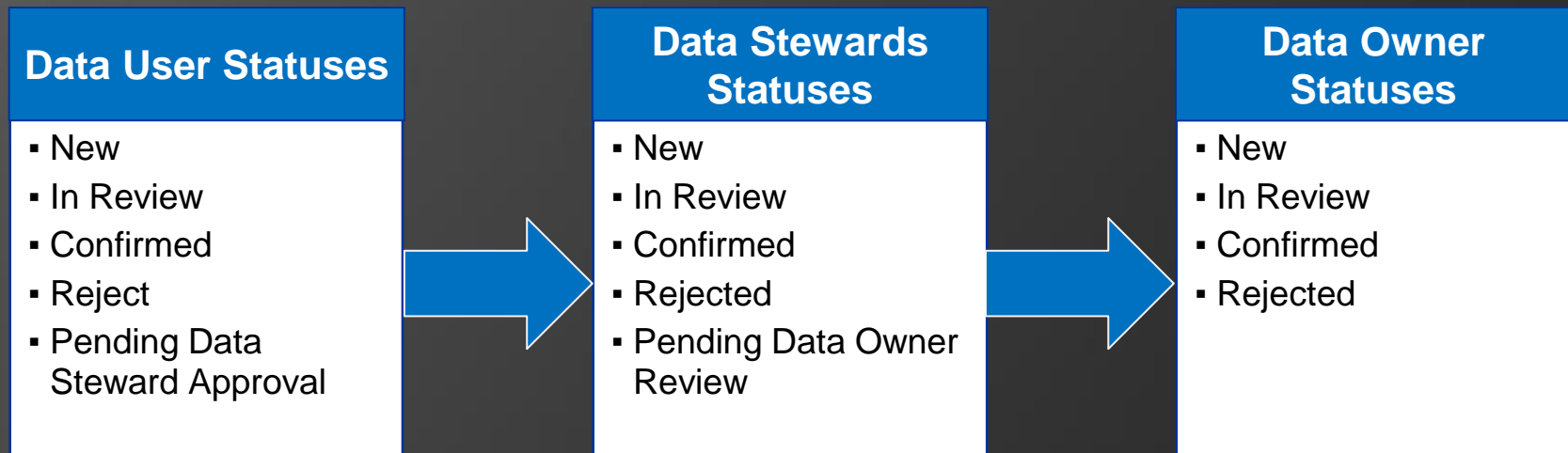
Workflow / Notifications

Excel

DWH

External (CRM, ..)

Data Governance

- Process by which you manage the quality, consistency, usability, security, and availability of the organization's data
- If bad data in source:
  - Clean data in MDS, tell source system to fix it
  - Interface back to source to automatically fix it
  - MDS is system of record – not using source data

Status of data review:

Data User Statuses	Data Stewards Statuses	Data Owner Statuses
▪ New ▪ In Review ▪ Confirmed ▪ Reject ▪ Pending Data Steward Approval	▪ New ▪ In Review ▪ Confirmed ▪ Rejected ▪ Pending Data Owner Review	▪ New ▪ In Review ▪ Confirmed ▪ Rejected

Why Profisee Master Data Maestro?

- Original developers of MDS as Stratature
- Platform built on top of MDS - uses MDS API
- Easier, faster, and customizable UI
- Adaptive modeling
- Integrated data quality validation and review
- Matching and master record creation (golden record)
- Interface to review, approve, or reject matching results
- Address verification & standardization with Bing/Melissa
- SDK and workflow integration components
- Bi-directional cut, copy, and paste to/from Microsoft Excel
- Metadata caching and deferred publishing

Demo

- SSIS package to stage data into MDS
- MDS Web UI
- MDS Add-in for Excel
- Master Data Maestro

Questions?

Master Data Services

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Resources:

- Microsoft Master Data Services in SQL Server 2012: http://bit.ly/QW6kpQ
- Master Data Services Terminology Overview: http://bit.ly/QW6m0X
- Master Data Services Resources: http://bit.ly/QW6n4Z
- Master Data Services (MDS) Miscellaneous tips: http://bit.ly/QW6rlj
- Interacting with Master Data Services (MDS): http://bit.ly/XMywtR
- Master Data Services Team Blog: http://blogs.msdn.com/b/mds/
- Master Data Services in SQL Server Books Online: http://msdn.microsoft.com/en-us/library/ee633763(v=sql.110).aspx\
- Master Data Services Forum: http://social.msdn.microsoft.com/Forums/en-US/sqlmds/threads
- Book: Microsoft SQL Server 2012 Master Data Services: http://amzn.to/UtVHaN