

# Reference vs. Master Data Management

Suchen Chodankar, Principal Product Manager, Reltio

**RELTIO**



# What is “reference data”?

Reference data is a non-volatile, slow moving **subset** of master data.

**Master Data Record**

Shipping Address:  
Address 1: 100 Marine Pkwy  
Address 2: #275  
City: Redwood Shores

State: CA

ZIP: 94065

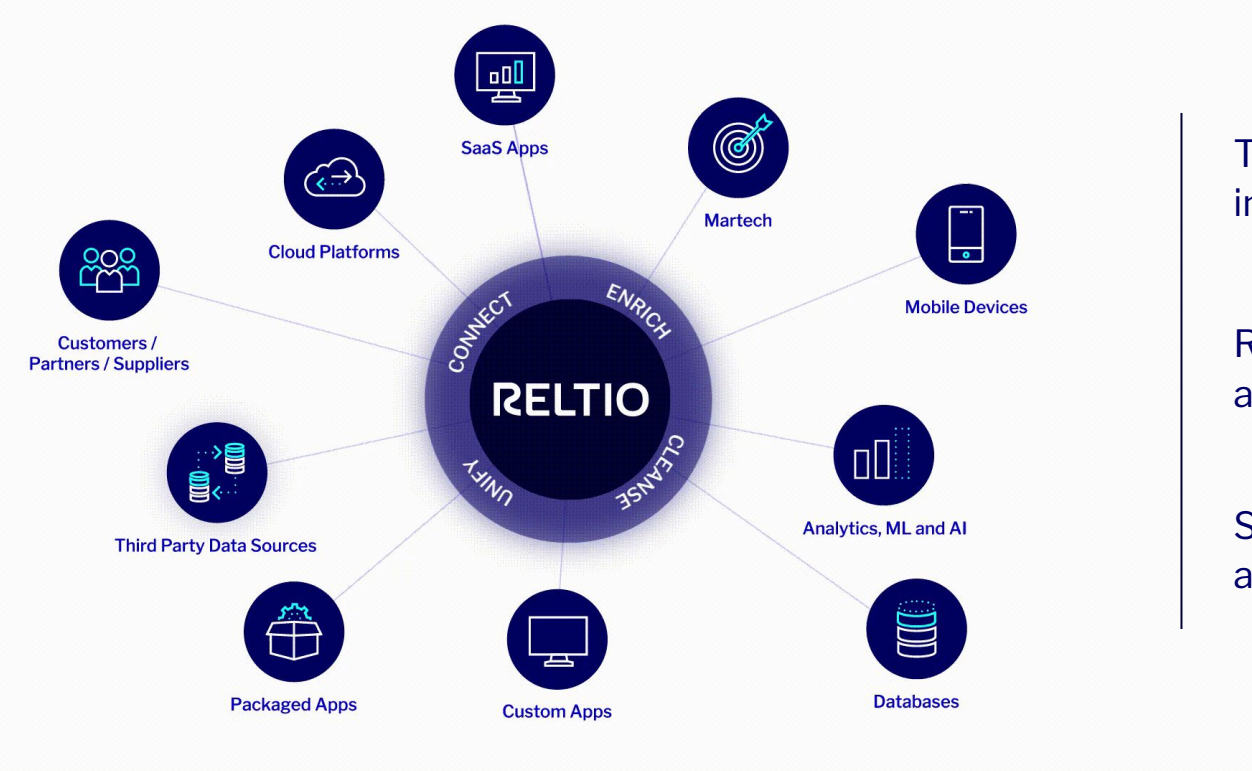
Country: US

Reference Data

Examples:

- ZIP
- Country
- SIC Codes
- Chart of Accounts
- Speciality Codes

# Our modern platform unifies, manages, and mobilizes your core data

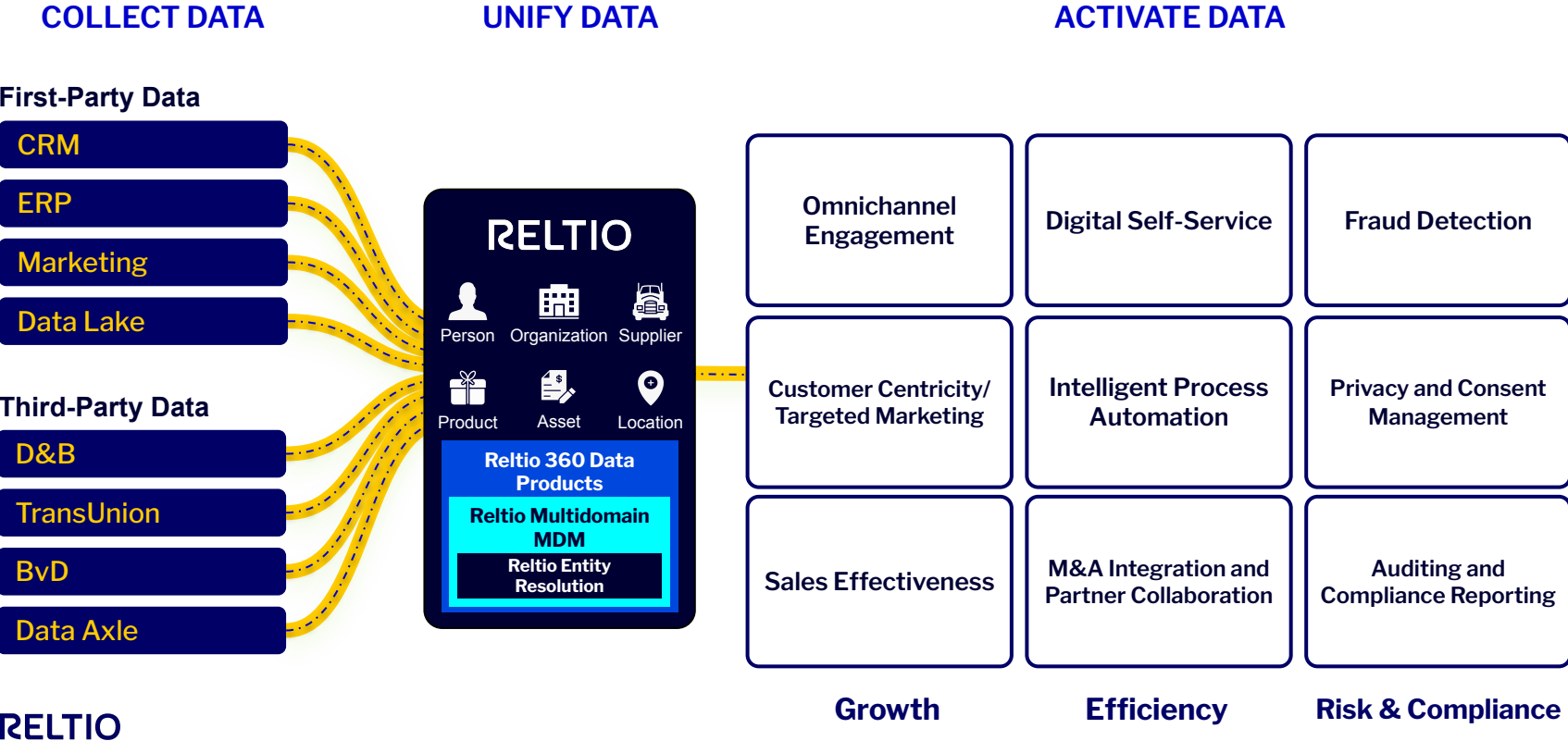


Trusted,  
interoperable data

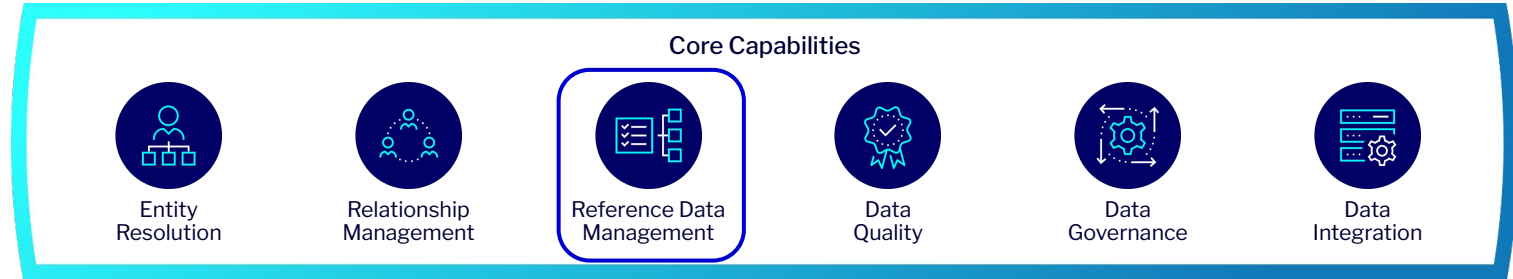
Real-time,  
always on

Secure, scalable,  
and flexible

# Key business outcomes we measure across industries



# Reltio Multidomain Master Data Management (MDM)



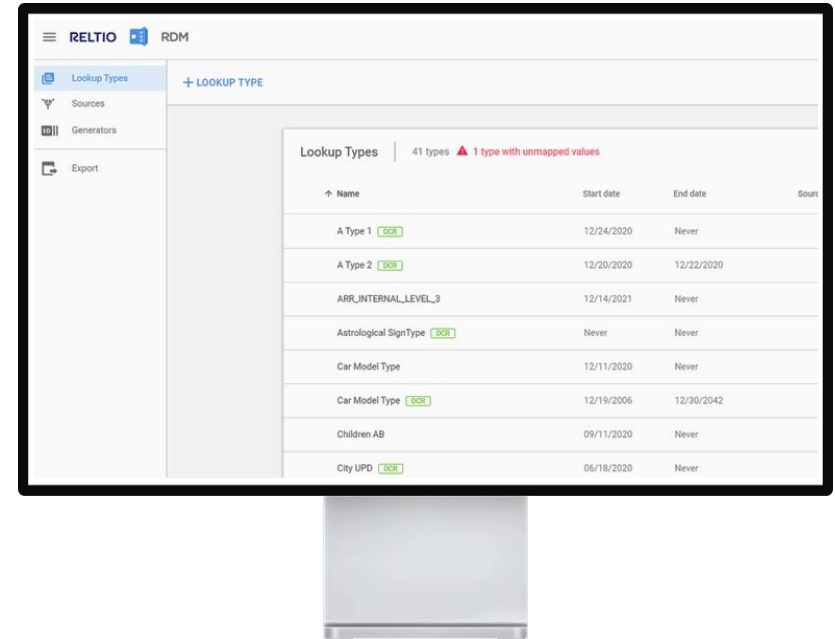
# Our multidomain MDM product includes built-in RDM—and more



# Ensure data quality with built-in reference data management

- ✓ **Create, manage, standardize, and provision reference data** with built-in RDM—no need for special integrations
- ✓ **Manage complex mappings** among customer, partner, product, and supplier data domains
- ✓ **Reduce IT burden** with configuration, lookup, and transcode REST APIs for reference data
- ✓ **Localize reference data** for any number of sources in any language based on user preferences

Confidently use and maintain high-quality reference data across the enterprise



# Key data management best practices for business responsiveness



## Real-time, secure, interoperable data

- Continuous curation and governance for high quality core data
- Up-to-date data accessible where needed
- Intuitive, self-service interface for business teams
- Built-in security and privacy



## Highly-flexible, scalable architecture

- Extends to any data source or domain
- Flexible data model adapts to your business
- Rapid scalability and integration



## AI-driven innovation

- Pioneering gen AI and LLM use for data unification
- GenAI-powered, conversational assistant
- Patent-pending, LLM-driven, pretrained ML model for entity resolution with zero-shot learning and no rules needed
- Horizontal and industry-specific pretrained ML models



## Fast time to value

- Prebuilt velocity packs incorporating market expertise
- Low-code/no-code integration development and prebuilt integrations
- Prescriptive delivery methodology with go-live in 90 days



# The world's top brands run on Reltio

**11** Fortune 100 companies

### LIFE SCIENCES

**29** Fortune 500 companies

### RETAIL | CPG | HOSPITALITY

**41** Fortune 1000 companies

### HEALTHCARE

**10** top 10 global pharmaceutical companies

**RELTIO**

### FINANCIAL SERVICES

### HIGH TECH | MANUFACTURING | MEDIA

The background features a complex, abstract pattern of blue dots. These dots are arranged in a series of overlapping, wavy bands that create a sense of depth and movement, resembling a digital or data-driven landscape. The dots are more densely packed in some areas and more sparse in others, contributing to the overall texture of the image.

Thank you



# Informatica MDM & 360 SaaS Applications

**Redefining Reference Data Management**

Robert Paramore, PMP

Global Community of Practice Leader, Reference Data Management

Where data  
& AI come to **LIFE**



# Simple

Quick

AI-Powered

Enterprise

All-in-One



Informatica

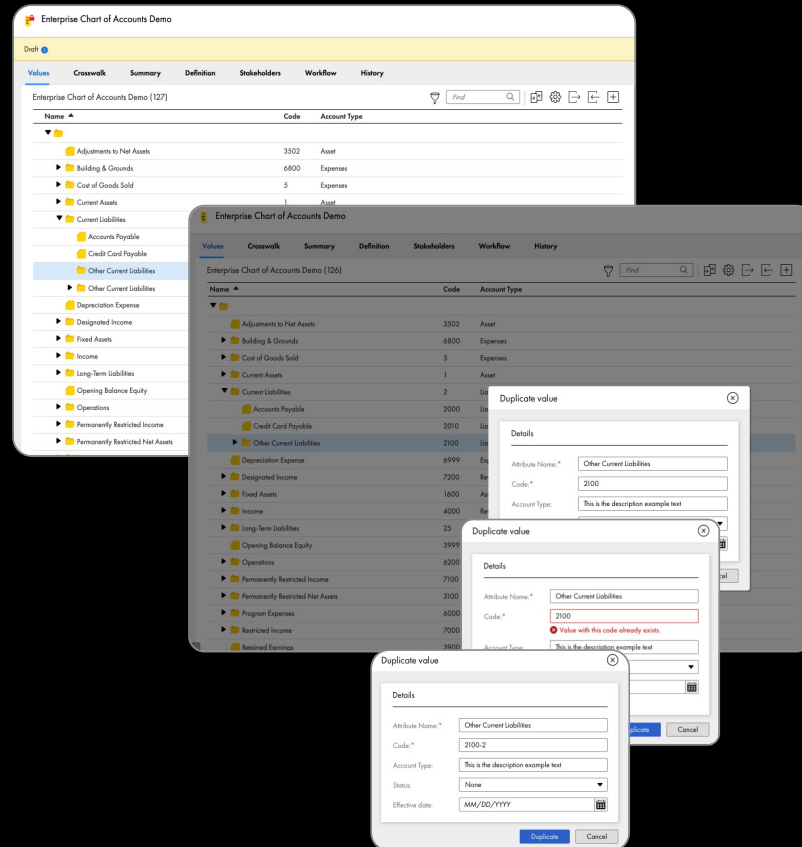


Simple

a cloud-native master data management solution

# Reference 360

enables the centralized definition, management, governance and sharing of Reference and Finance Data Sets



Simple



Quick

AI-Powered

Enterprise

All-in-One

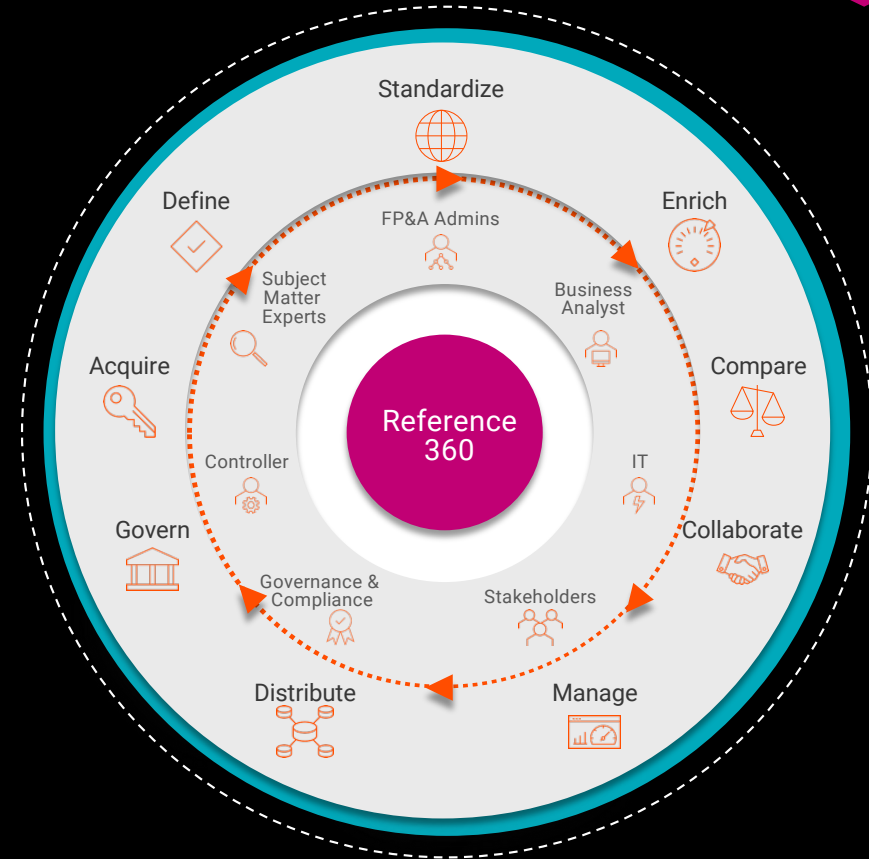


Quick

Up to **85%** increase in efficiency with ready-to-use applications

Dashboards and visualizations in **minutes**

Intuitive **AI** Enabled processes and low/no code configuration



Simple

Quick



**AI-Powered**

Enterprise

All-in-One



Informatica



AI-Powered

# CLAIRE<sup>®</sup>-Powered Intelligence

## Intelligent MDM SaaS

Every Domain of Master Data

**ALL-IN-ONE CAPABILITIES**

**CLAIRE<sup>®</sup>**

AI-Powered Metadata Intelligence & Automation



Identity Matching



Product Matching



Schema Mapping



Rule Recommendation



Dataset Recommendations



Data Anomaly Detection



Data Set Similarity



Glossary Association



Entity Extraction



Data Domain Inference

Cloud Data Integration

Cloud Data Quality

Cloud Application Integration

Data Catalog

Cloud Platform Services

Identity Service

Session Service

Federated Repository Service

Secrets Management

Configuration Management

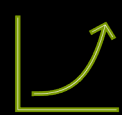
Connectivity

Connect to All Systems Containing or Needed Master Data

**Simple**

**Quick**

**AI-Powered**



**Enterprise**

**All-in-One**



# Reference 360 use cases

Enterprise



## Enterprise

- Centralize reference data spread across **enterprise**
- Define, manage, and secure application and business **reference data sets** to ensure accurate data is used in compliance with regulations and transactions
- Manage **corporate** and **employee structures** and hierarchies
- Empower business users and improve productivity
- Remove Operational Overhead and Inefficiencies



## Finance / Accounting

- Provide **enterprise view** of complete and up-to-date, financial data
- Offer **self-service** access to finance team to make accurate planning, forecasting, and what-if-analysis
- Deliver **visibility and audit** into changes of finance data leading to reduction in analysis time and resources
- **Deliver** accurate financial reporting for executive decision making and compliance



## Industry / Healthcare

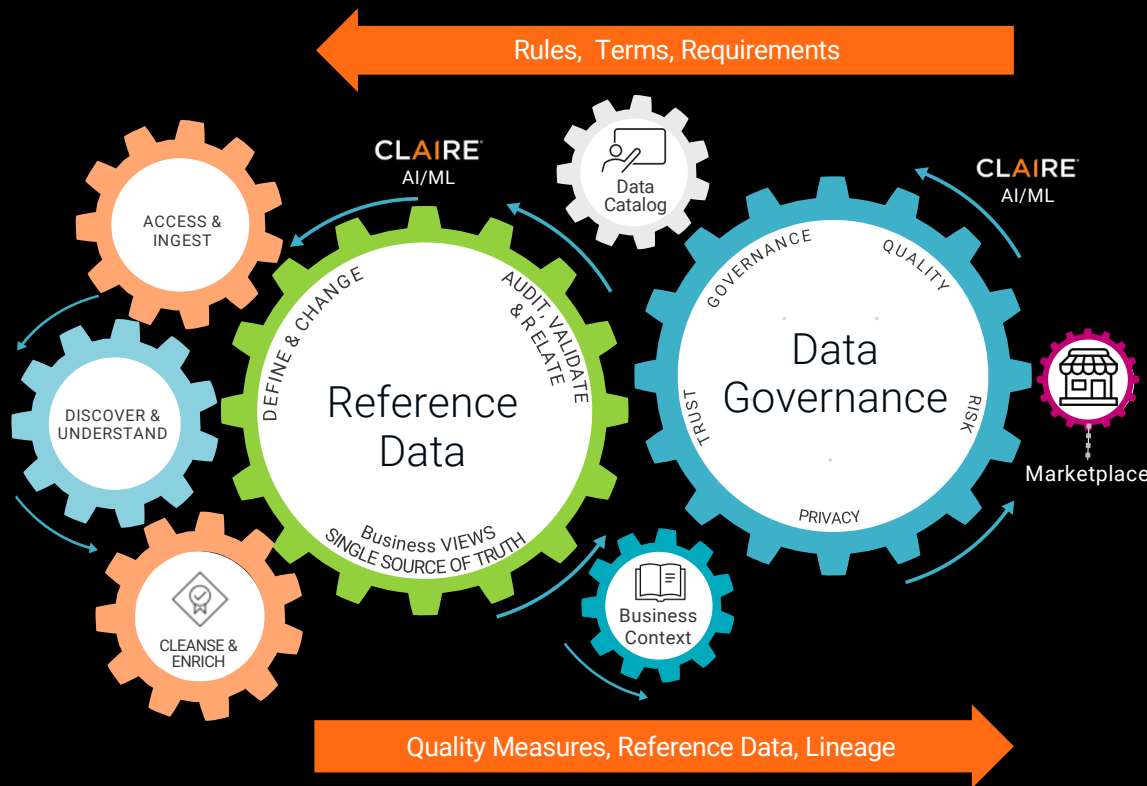
- Map clinical and billing codes across **operational** and **clinical** systems
- Ensure accurate data is used in **compliance** with **regulations** and transactions.
- Streamline **claim** payments with reliable code conversions
- Provide accurate **system wide reporting** for clinical, operational and financial data teams
- **Centralize platform** for internal and external taxonomy and their mappings



## Brand Hierarchy

- **Combine hierarchies** of product categories for campaigns
- **Map brands and product categories'** hierarchies for each product-packaging combination
- **Define, track and distribute** all operational elements of a brand.
- **Accurately report** for campaign, business intelligence and planning
- Provide an overall view of **corporate and regional brand hierarchies** for a global strategy

# Informatica Powers Enterprise Data Initiatives



## CLAIRE<sup>®</sup>

### Business Glossary Integration

Automatically link business entity attributes to glossary

### Automated Data Quality Rules

Recommend data quality rules for attributes based on data governance rules/policies

### Change Management Workflows

Provide Governed Change Management allowing automated processes

**Simple**

**Quick**

**AI-Powered**

**Enterprise**

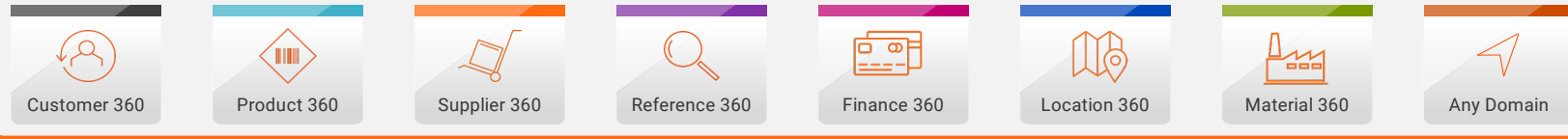


**All-in-One**

All-in-One

# Intelligent MDM & 360 Applications

Extensible Preconfigured Domain, Industry and Integration Content with Custom Domain Capabilities



## All-in-One MDM Services



← SHARED IDMC MICROSERVICES →

# CLAIRE<sup>®</sup>

Cloud Data Integration

Cloud Data Quality

Cloud Application Integration

Data Catalog

Intelligent Data Management | Cloud Services

Identity Service

Session Service

Federated Repository Service

Secrets Management

Configuration Management

## Connectivity

10K+ METADATA-AWARE CONNECTORS

**Where data  
& AI come to**





# Essential: Reference & Master Data



[peter.aiken@anythingawesome.com](mailto:peter.aiken@anythingawesome.com) +1.804.382.5957

<https://api.deepai.org/job-view/file/98f46174-0564-4b06-b93b-b0daca83699b/outputs/output.jpg>



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## Peter Aiken, Ph.D.

- I've been doing this a long time
- My work is recognized as useful
- Associate Professor of IS ([vcu.edu](http://vcu.edu))
- Institute for Defense Analyses ([ida.org](http://ida.org))
- DAMA International ([dama.org](http://dama.org))
- MIT CDO Society ([iscdo.org](http://iscdo.org))
- Anything Awesome ([anythingawesome.com](http://anythingawesome.com))
- Experienced w/ 500+ data management practices worldwide
- 12 books and dozens of articles
- Multi-year immersions
  - US DoD (DISA/Army/Marines/DLA)
  - Nokia
  - Deutsche Bank
  - Wells Fargo
  - Walmart
  - HUD ...

**\$1,500,000,000.00 USD**



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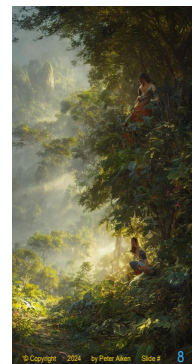


# Program Overview

- Data Management Overview

- What is Reference and MDM?
- Why is Reference and MDM important?
- Reference & MDM Building Blocks
- Guiding Principles & Best Practices
- Take Aways, References & Q&A

Essential:  
Reference &  
Master Data

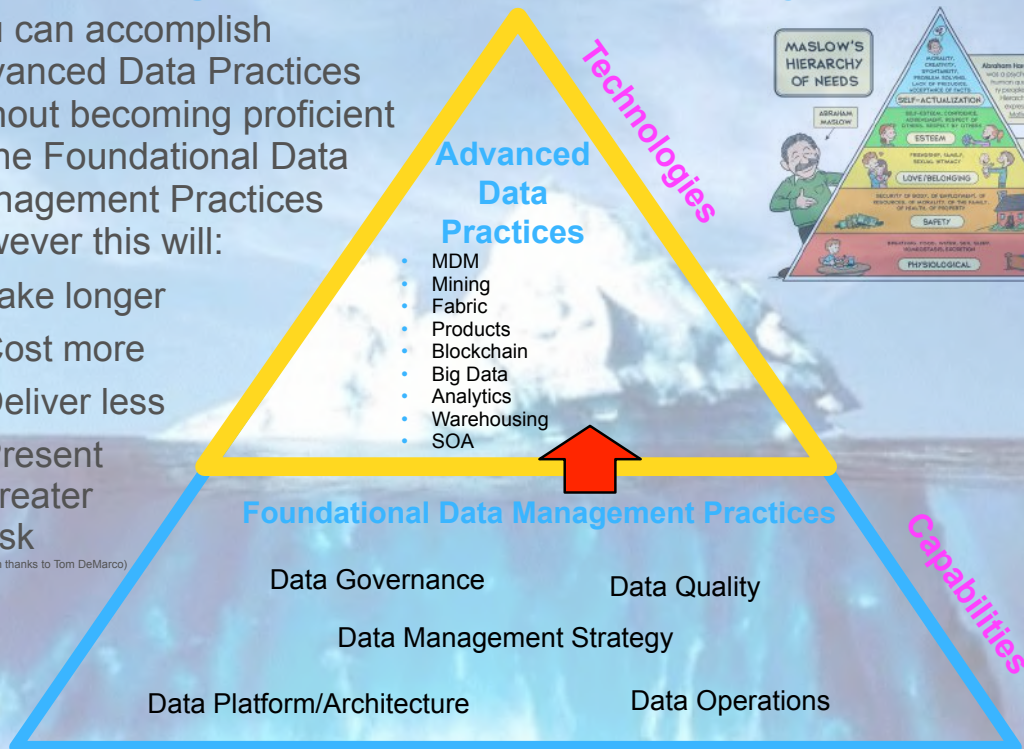


## Data Management Practices Hierarchy

You can accomplish Advanced Data Practices without becoming proficient in the Foundational Data Management Practices however this will:

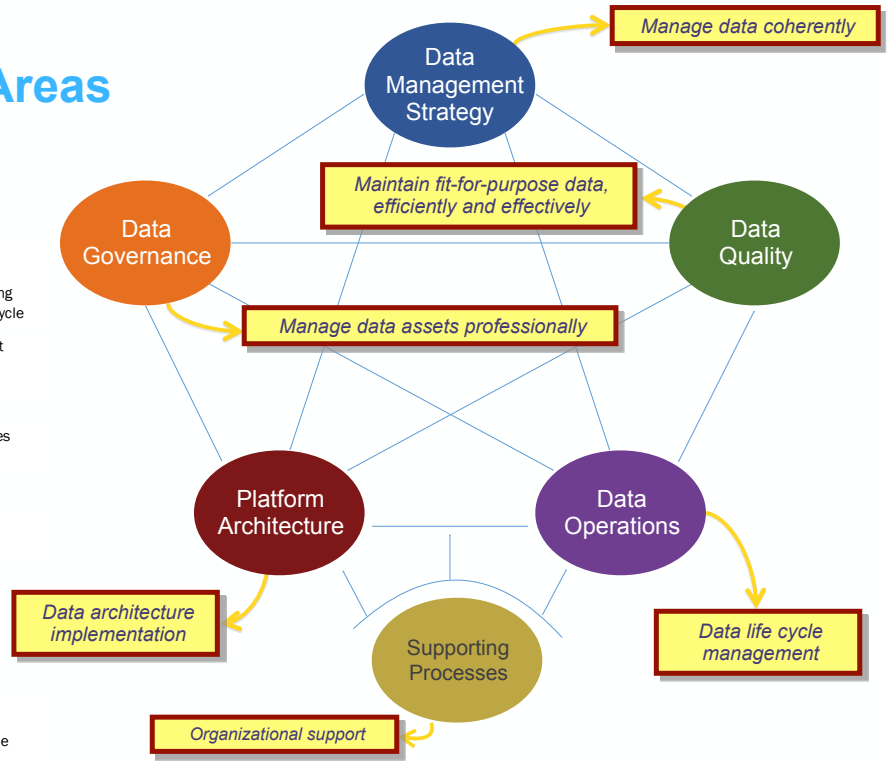
- Take longer
- Cost more
- Deliver less
- Present greater risk

(with thanks to Tom DeMarco)



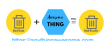
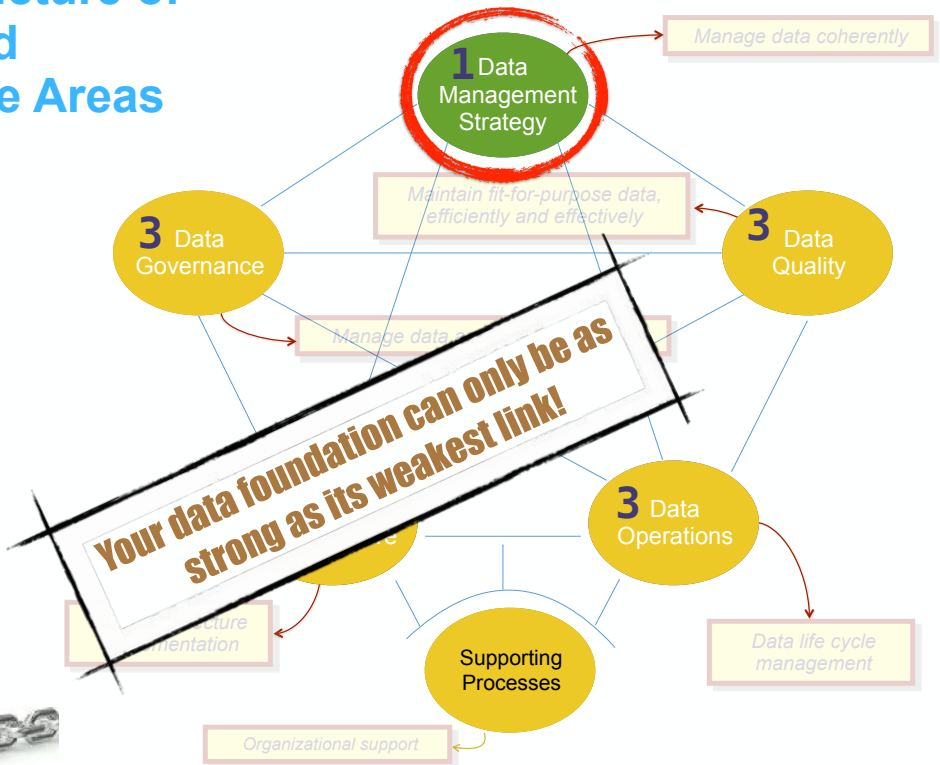
# DMM<sup>SM</sup> Structure of 5 Integrated DM Practice Areas

Component	Process Areas
Data Management Strategy	Data Management Goals Corporate Culture Data Management Funding Data Requirements Lifecycle
Data Governance	Governance Management Business Glossary Metadata Management
Data Operations	Standards and Procedures Data Sourcing
Data Quality	Data Quality Framework Data Quality Assurance
Platform & Architecture	Architectural Framework Platforms & Integration
Supporting Processes	Measurement & Analysis Process Management Process Quality Assurance Risk Management Configuration Management

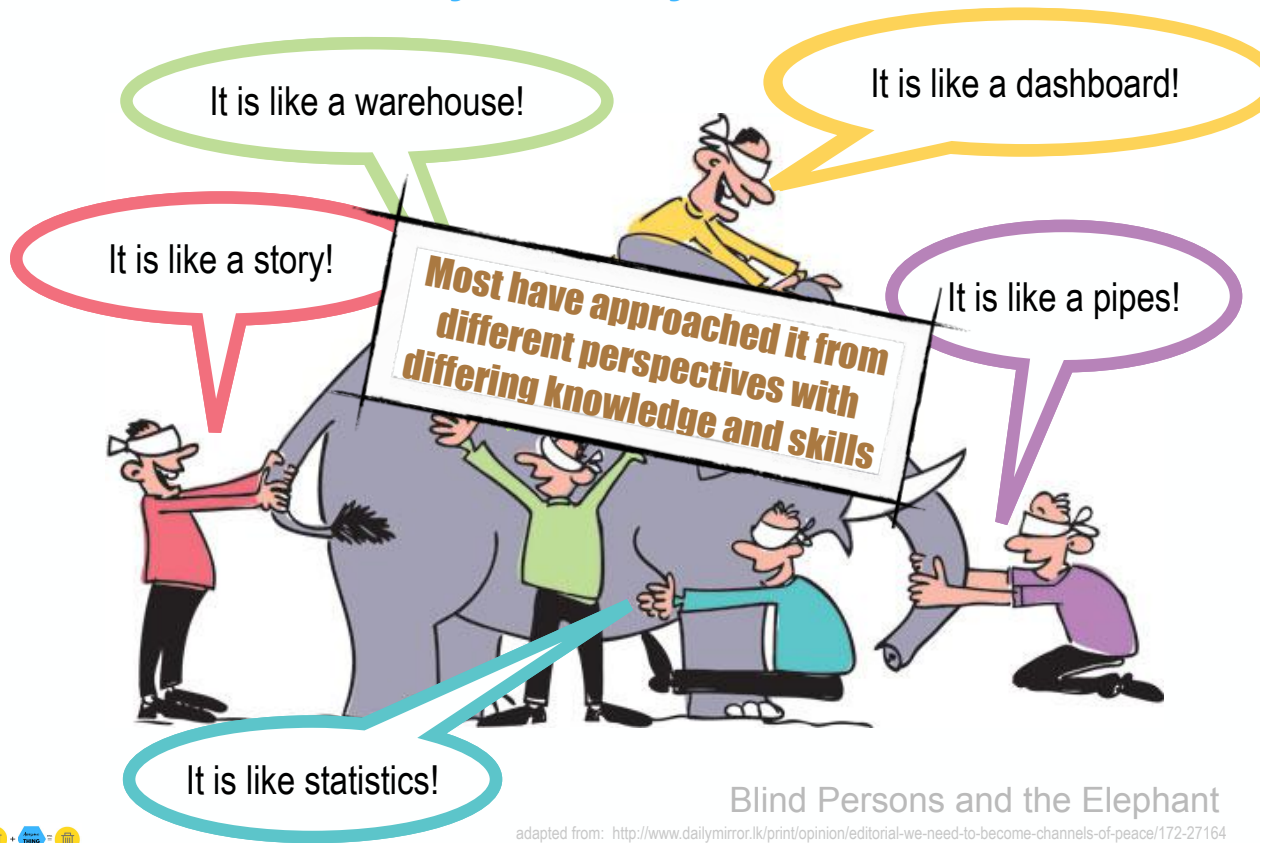


# DMM<sup>SM</sup> Structure of 5 Integrated DM Practice Areas

5	Optimized
4	Measured
3	Defined
2	Managed
1	Initial



# Data is not broadly or widely understood



Sources



Data Management

Unrefined  
data management  
definition

Uses



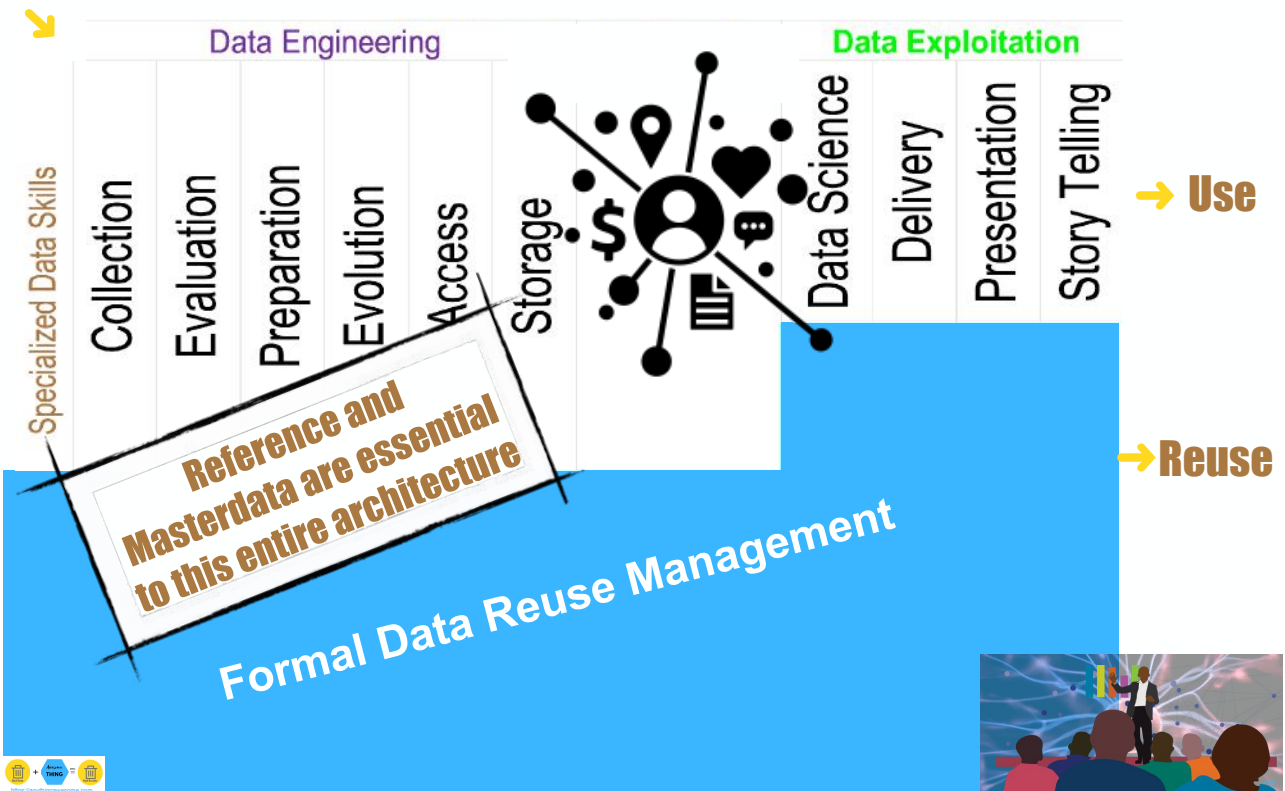
# More refined data management definition

Sources → Data Management → Reuse



# Better still data management definition

## Sources



## Program overview

- Data Management Overview

- What is Reference and MDM?

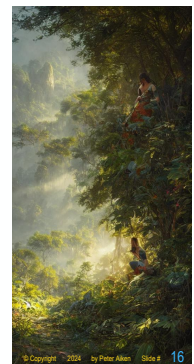
- Why is Reference and MDM important?

- Reference & MDM Building Blocks

- Guiding Principles & Best Practices

- Take Aways, References & Q&A

Essential:  
Reference &  
Master Data

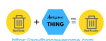


## Data Preparation Tools & Vendor Hype

- CIOs/CDOs feel pressure
- Vendor/project promise auditing
- No understanding of hype cycle



# HYPE



## Who wrote this ... ?

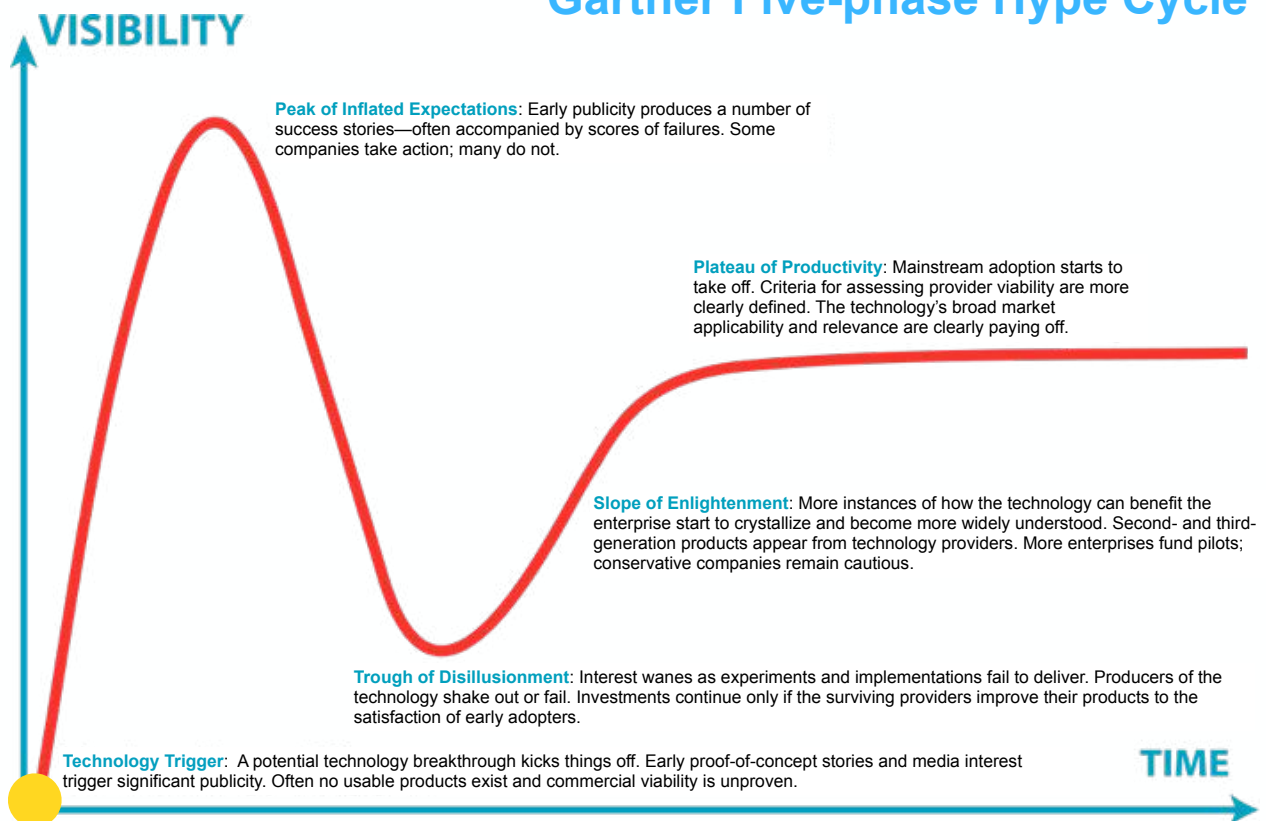
- *In considering any new subject,*
- *there is frequently a tendency first to overrate what we find to be already interesting or remarkable, and*
- *secondly - by a sort of natural reaction - to undervalue the true state of the case.*



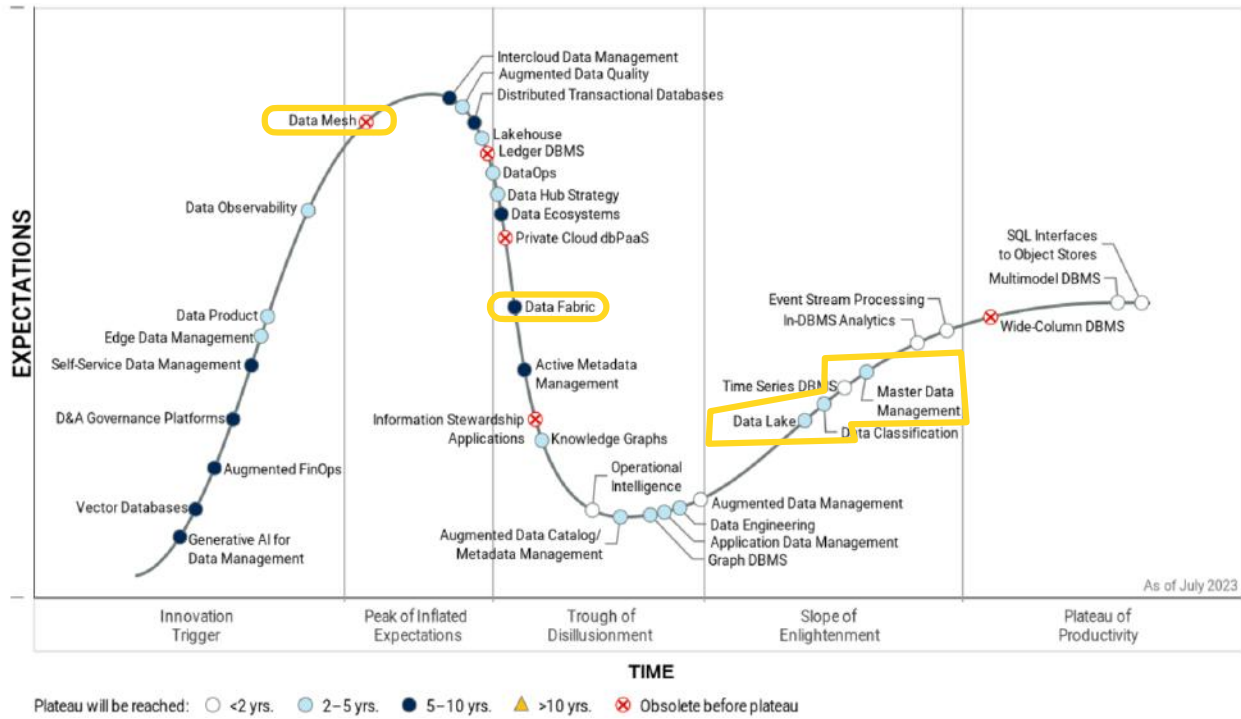
- Lady Augusta Ada King, (1815 – 1852)  
Countess of Lovelace
- (aka) Ada Lovelace, daughter of Lord Byron
- Publisher of the first computing program



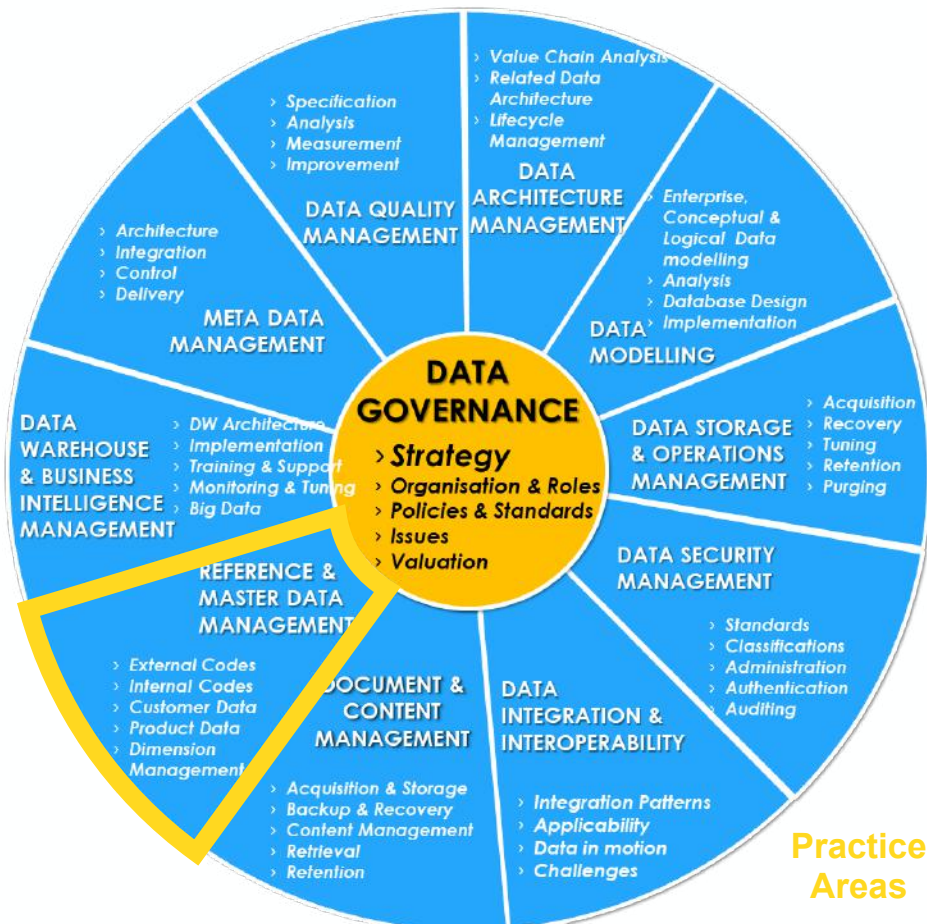
## Gartner Five-phase Hype Cycle



# Gartner Hype Cycle for Data Management 2023

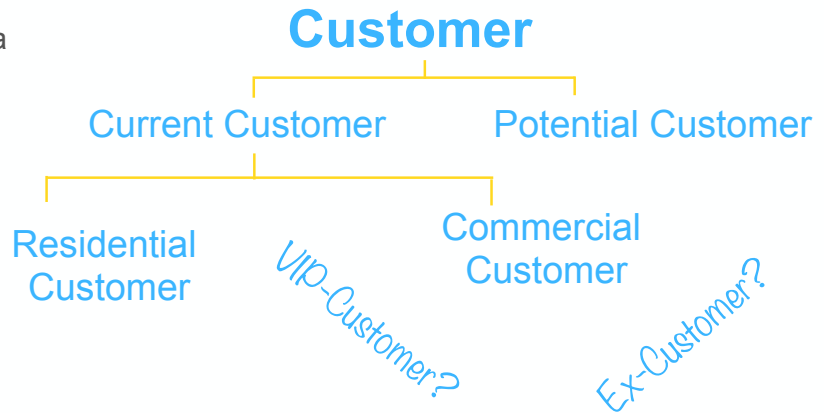


## Data Management Body of Knowledge (DM BoK V2)



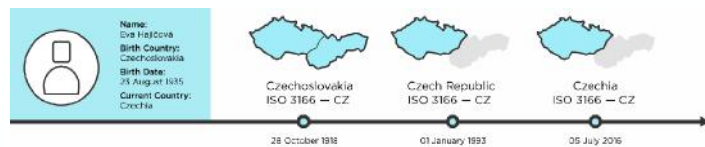
## Definition: Reference Data Management

- Control over defined domain values (also known as vocabularies), including:
  - Control over standardized terms, code values and other unique identifiers;
  - Business definitions for each value, business relationships within and across domain value lists, and the;
  - Consistent, shared use of accurate, timely and relevant reference data values to classify and categorize data.



## Reference Data

- Data used to classify to categorize other data, the value domain



- Order status: new, in progress, closed, cancelled
- Two-letter USPS state code abbreviations (VA)
- Reference Data Sets

US	United States
GB (not UK)	United Kingdom

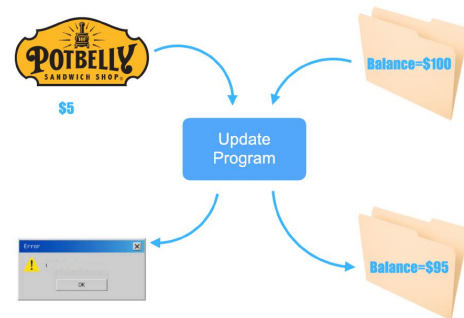




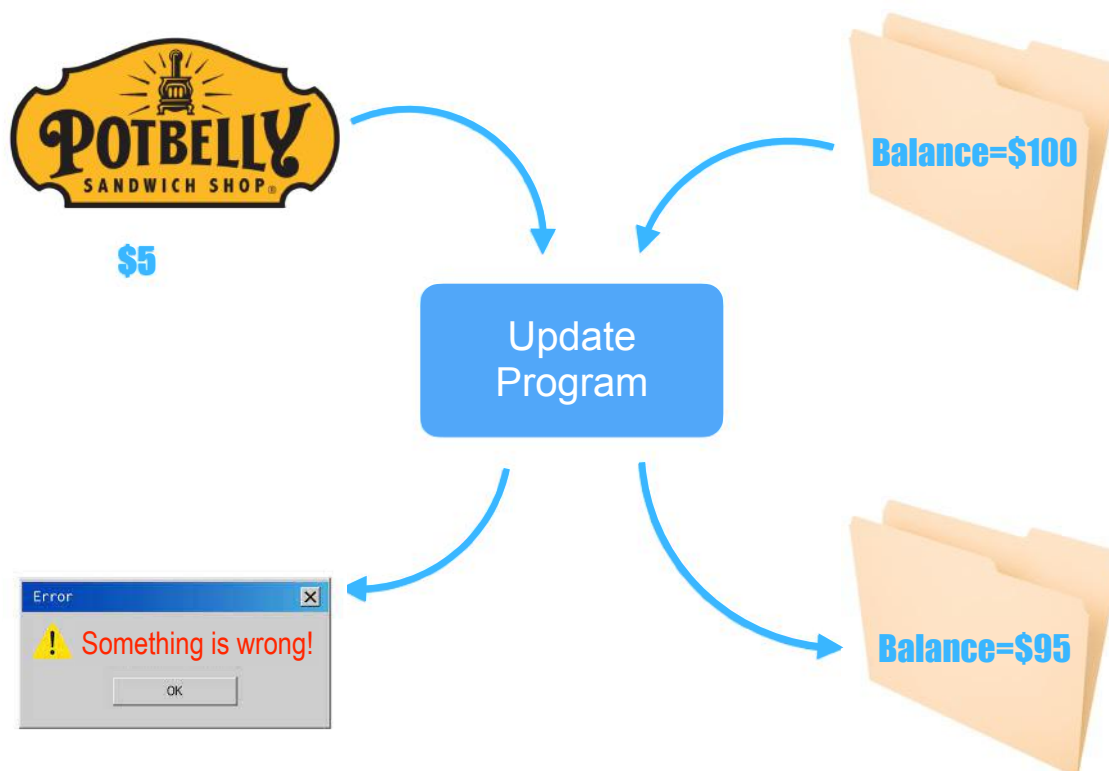
## Master Data



- Data about business entities providing context for transactions but not limited to pre-defined values
- Business rules dictate format and allowable ranges
  - Parties (individuals, organizations, customers, citizens, patients, vendors, supplies, business partners, competitors, employees, students)
  - Locations, products, financial structures
- Provide context for transactions
- From the term "Master File"



## Example Transaction Processing System



# Reference Data versus Master Data

- Reference Data:
  - Control over defined domain values (vocabularies) for standardized terms, code values, and other unique identifiers
  - The fact that we maintain these 9 specific gender codes
- Master Data:
  - Control over master data values to enable consistent, shared, contextual use across systems
  - The "golden" source of the gender of your customer "Pat"

FBI & Canadian Social Security Gender Codes	
	1. Male
	2. Female
	3. Formerly male now female
	4. Formerly female now male
	5. Uncertain
	6. Won't tell
	7. Doesn't know
	8. Male soon to be female
	9. Female soon to be male

Both provide the context for transaction data



## Definitions



- Planning, implementation and control activities to ensure consistency with a "golden" version of contextual data values
- ... as opposed to **mobile device management**
- Gartner holds that MDM is a **discipline** or **strategy**
  - "... where the business and the IT organization work together to ensure the uniformity, accuracy, semantic persistence, stewardship and accountability of the enterprise's official, shared master data."



- Sold as technology-based solution
- Official, consistent set of identifiers - examples of these core entities include:
  - **Parties** (customers, prospects, people, citizens, employees, vendors, suppliers, trading partners, individuals, organizations, citizens, patients, vendors, supplies, business partners, competitors, students, products, financial structures \*LEI\*)
  - **Places** (locations, offices, regional alignments, geographies)
  - **Things** (accounts, assets, policies, products, services)



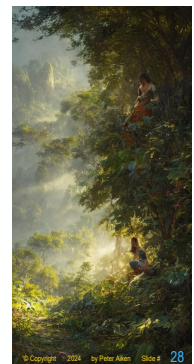
# Program overview

- Data Management Overview
- What is Reference and MDM?

Essential:  
Reference &  
Master Data

- Why is Reference and MDM important?

- Reference & MDM Building Blocks
- Guiding Principles & Best Practices
- Take Aways, References & Q&A

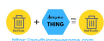


## Three Types of Data

- Reference
  - » Countries where we do business?
  - » Types of accounts available?
  - » Controlled vocabulary items
  - Controls accessible data values
- Master
  - » Are you a member of our premium club?
  - » Authorizing uses/users?
  - » Common/standard data structures
  - Controls access to system capabilities
- Transaction
  - » \$5
  - » Authorized
  - » Like
  - Instances of values

**MDM can make data  
governance 'easier'**

Example from: Dr. Christopher Bradley of DMAdvisors—he has more, ping him at [chris.bradley@dmadvisors.co.uk](mailto:chris.bradley@dmadvisors.co.uk)



# What is Strategy?

strat·e·gy

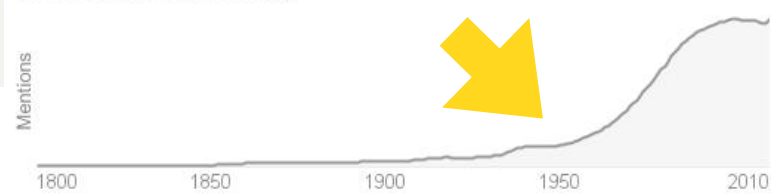
/ˈstrætəʒi/

noun

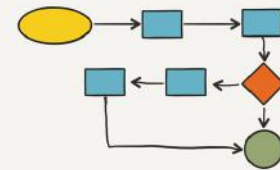
1. a plan of action or policy designed to achieve a major or overall aim.  
"time to develop a coherent economic strategy"  
synonyms: master plan, grand design, game plan, plan (of action), action plan, policy, program; More

A thing

Use over time for: Strategy



- Current use derived from military
  - **a pattern in a stream of decisions**  
[Henry Mintzberg]



PROCESS

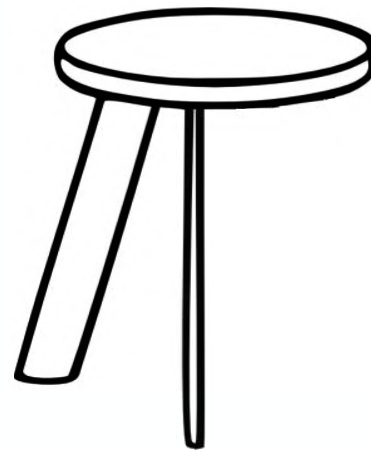


<https://anyingadstone.com>

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## + 1 Year

- Confusion as to the system's value
  - Users lack confidence
  - Business did not know how to use "**the MDM**"
- General agreement
  - Restart the effort
- "Root cause" analysis
  - Consensus
  - Poor quality data
  - Inadequate training
- Response
  - *Get data quality-ing!*
- Inexperienced
  - Immature data quality practices
  - Tool/technological focus
  - Purchased a data quality tool



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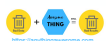
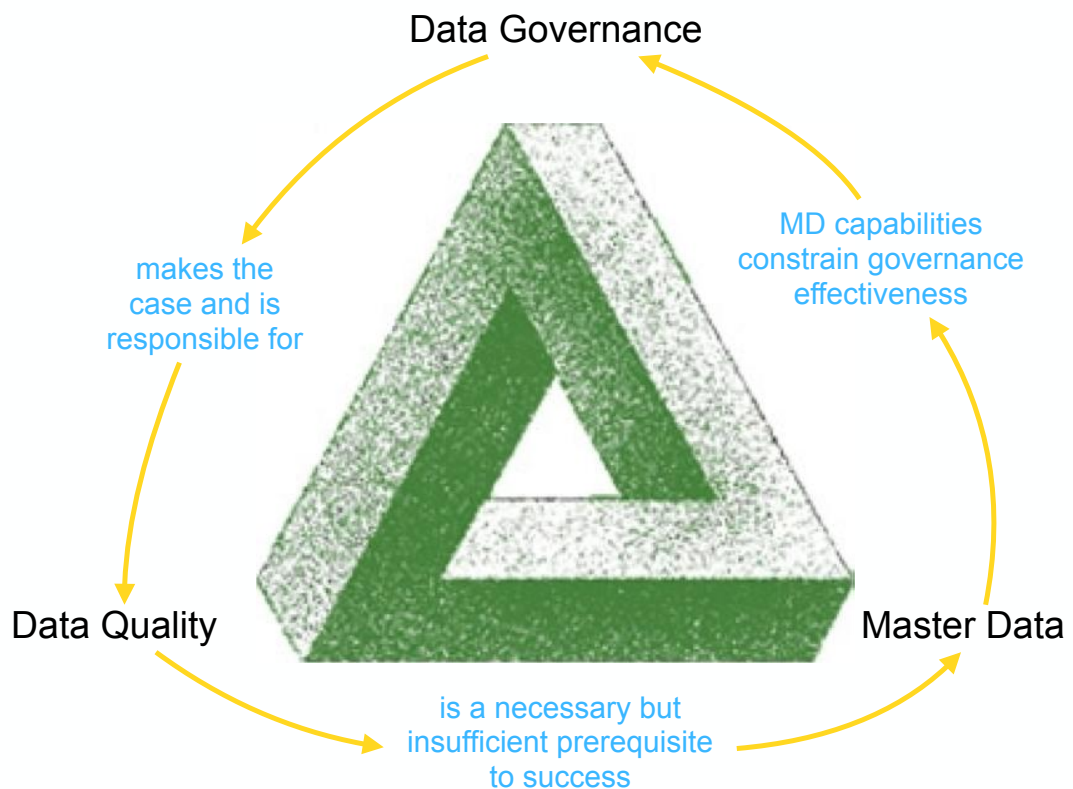
## My most profound lesson! (so far)



# Garbage In → Garbage Out!



## Interdependencies



# A realistic way to begin practicing MDM

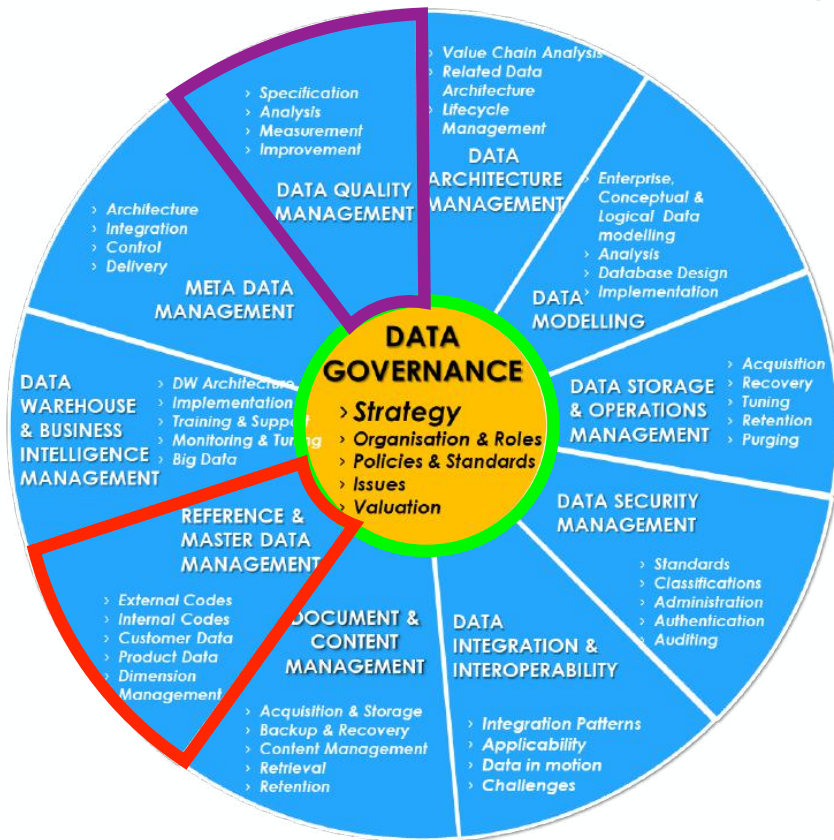


- Select 3 data management practice areas (for example)

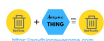
– Reference and Master Data Management

– Data Quality Management

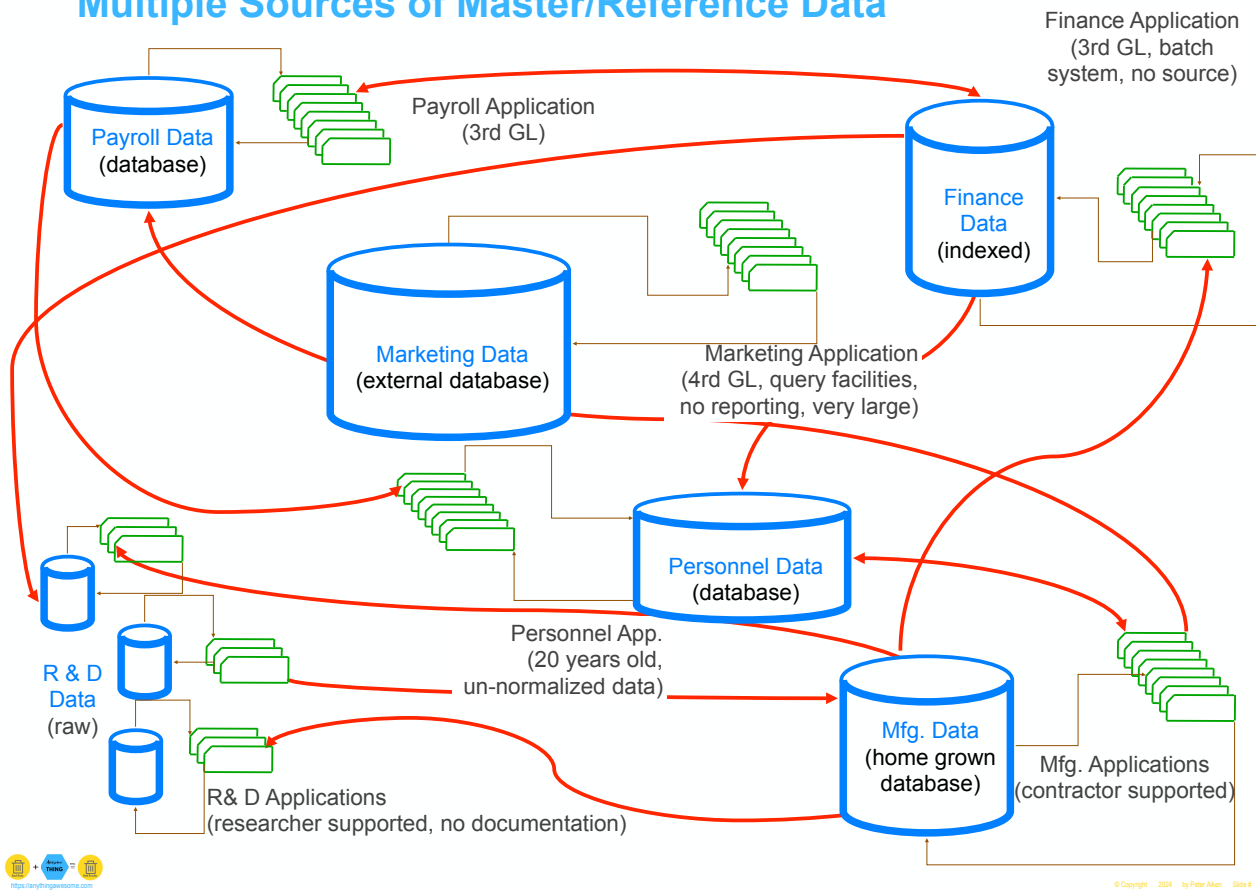
– Data Governance



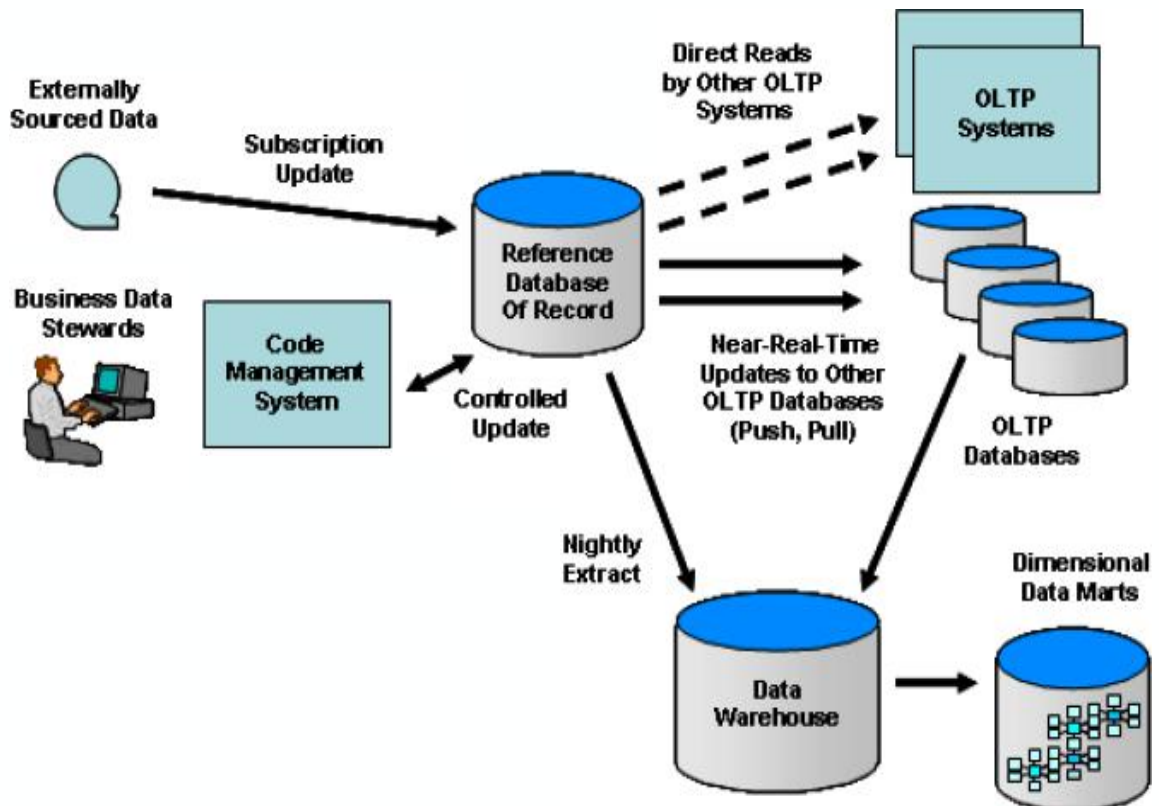
# Vocabulary is Important-Tank, Tanks, Tankers



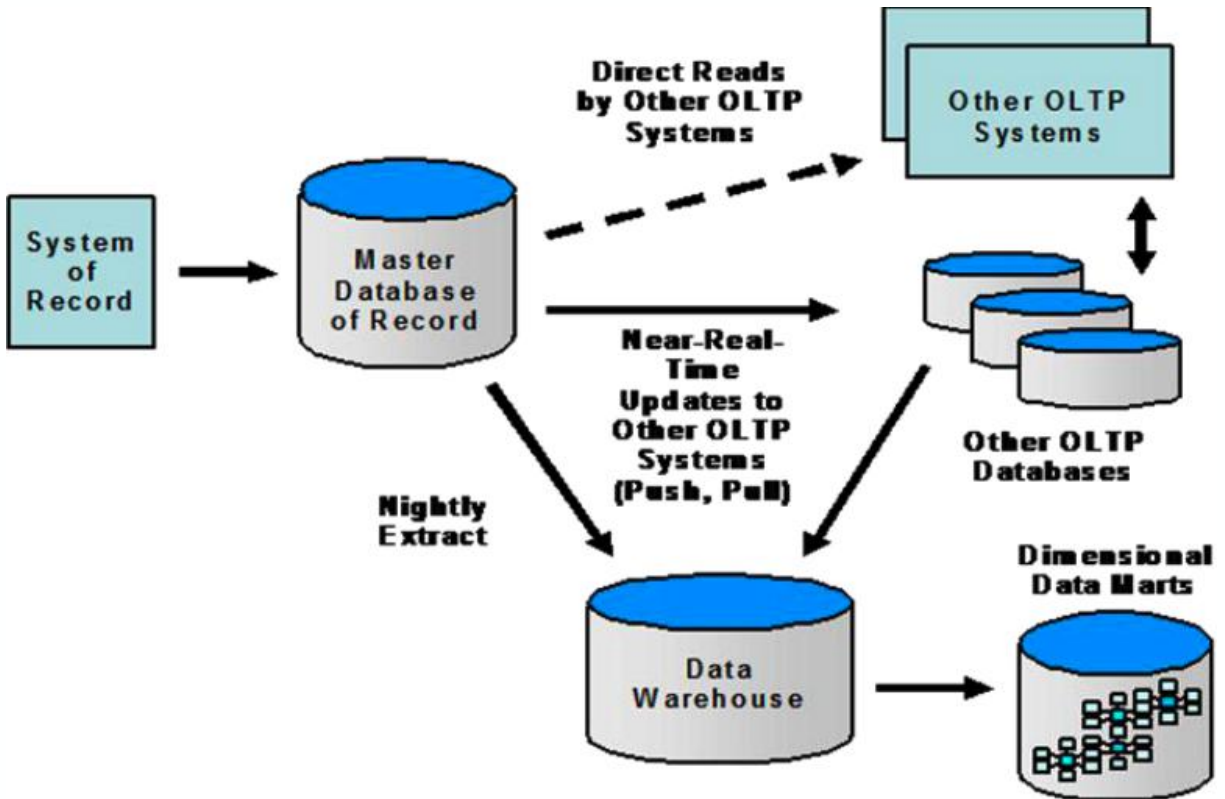
## Multiple Sources of Master/Reference Data



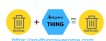
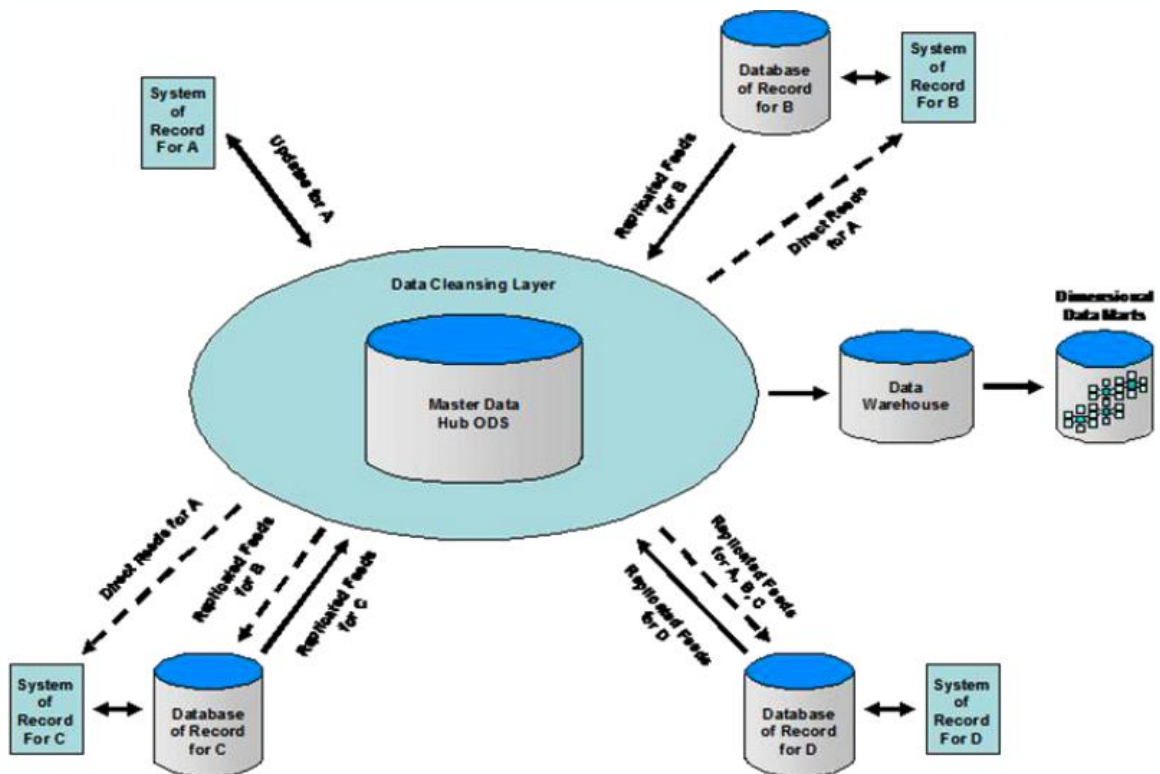
## Reference Data Architecture



# Master Data Architecture



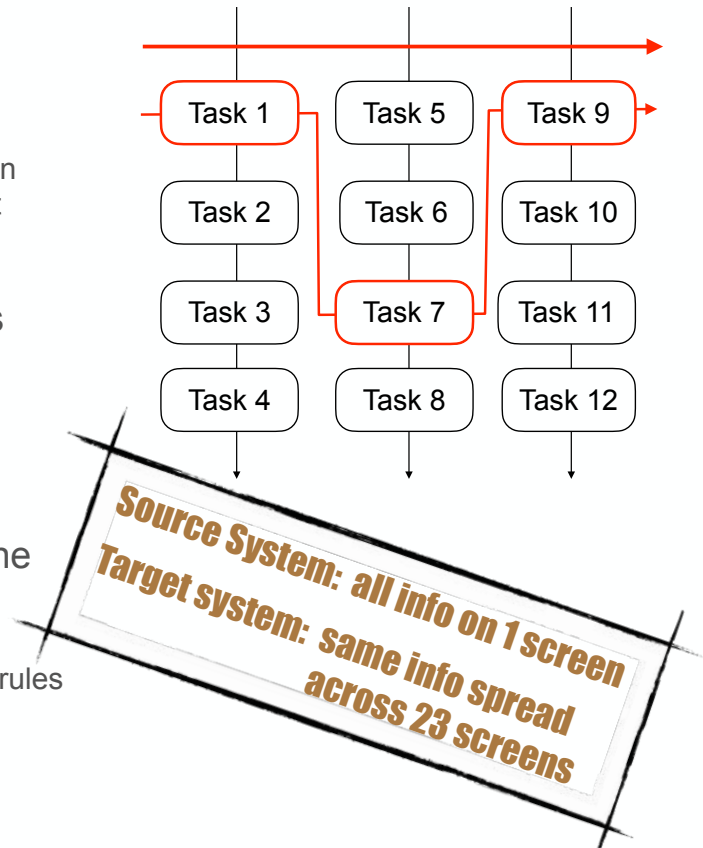
# Combined R/M Data Architecture



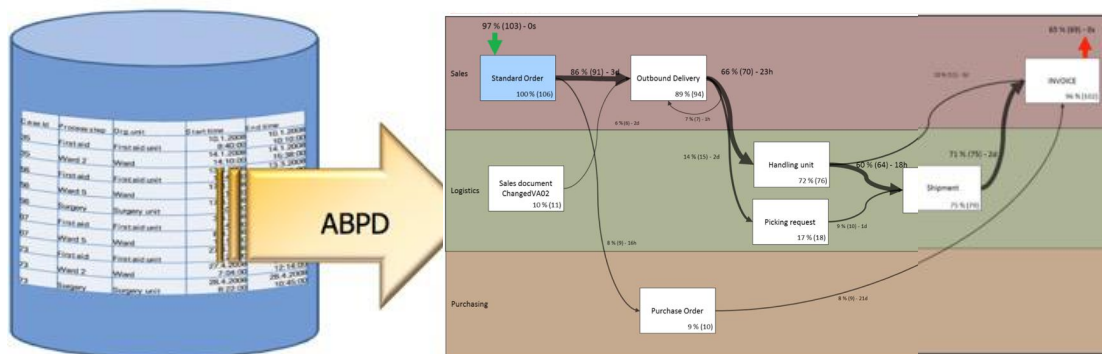


## Task vs. Process Orientation

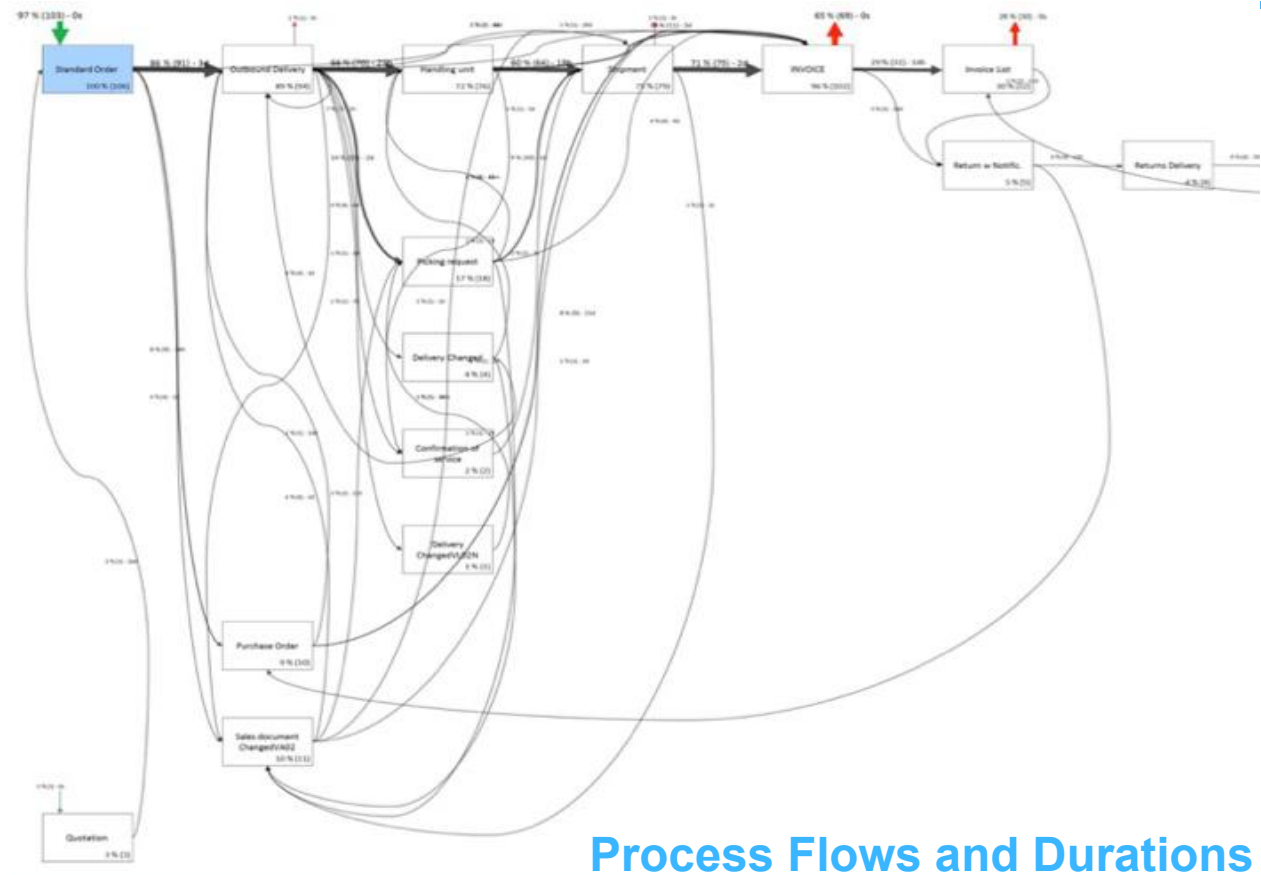
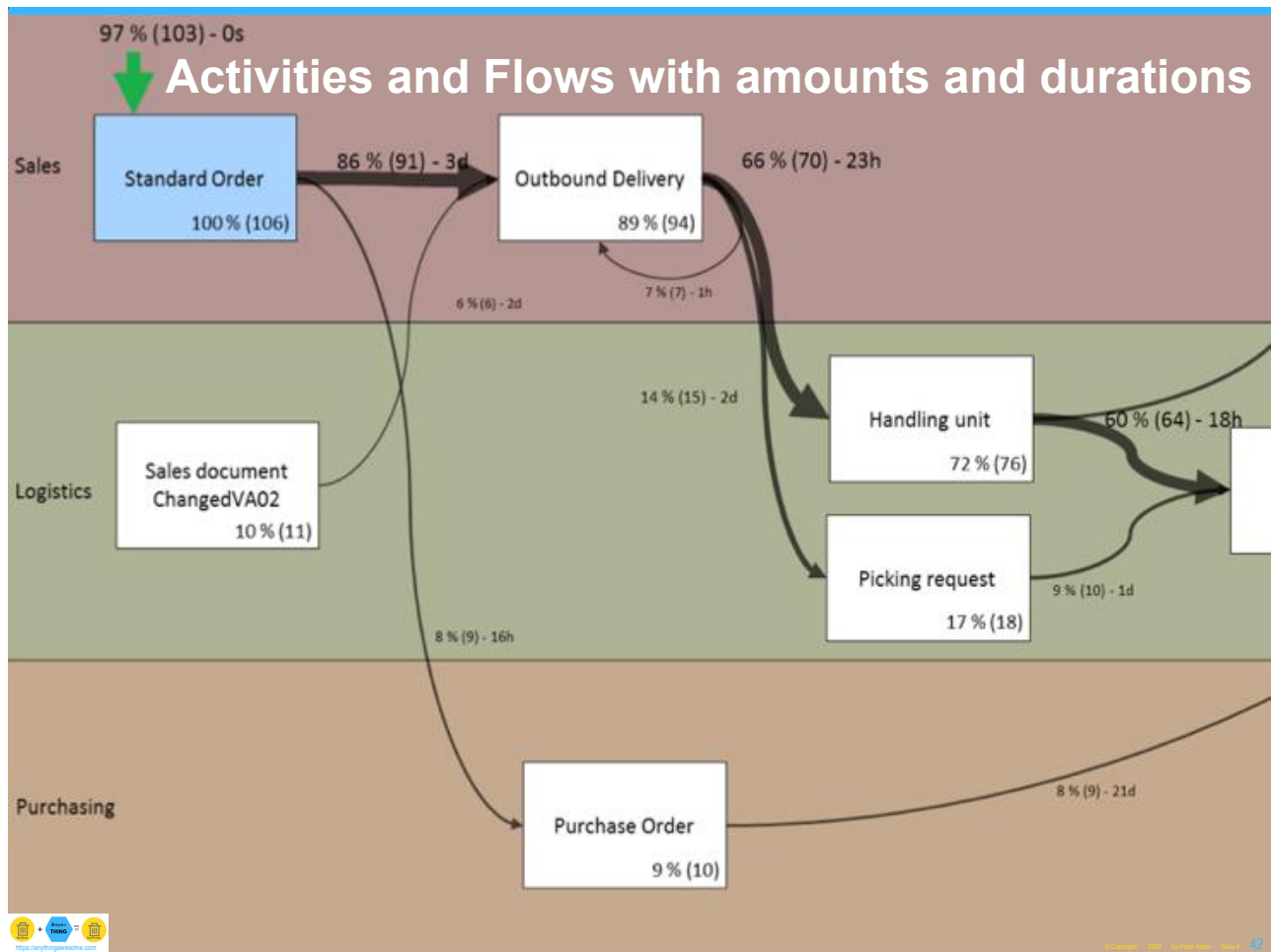
- What is meant by a task orientation?
  - Industrial work should be broken down into its simplest and most basic tasks
- What is meant by a process orientation?
  - Reunifying tasks into coherent business processes
- What else must be part of the analysis?
  - Identify and abandon outdated rules and assumptions that underlie current business operations



## Automating Business Process Discovery (qpr.com)



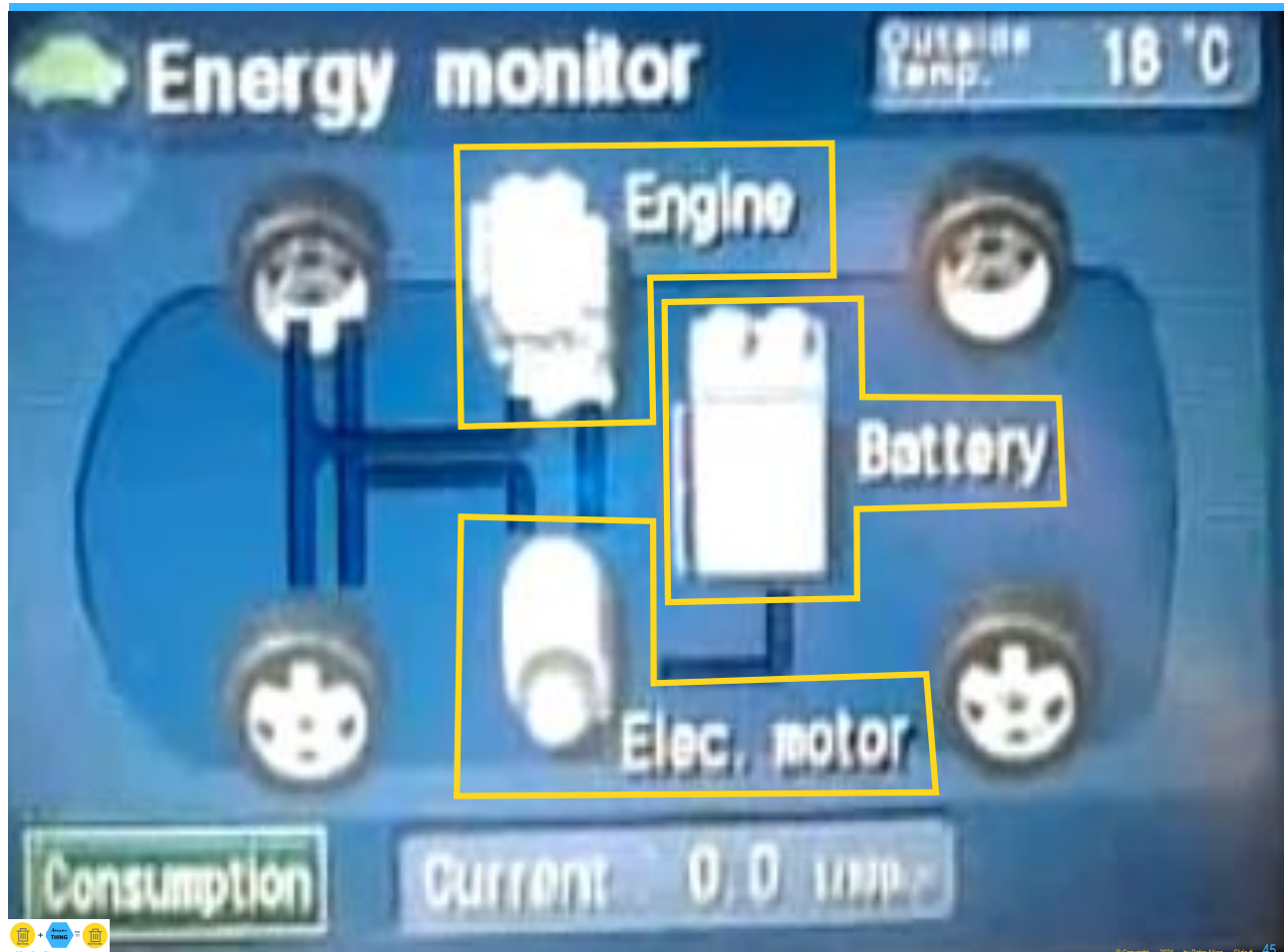
- Benefits
  - Obtain holistic perspective on roles and value creation
  - Customers understand and value outputs
  - All develop better shared understanding
- Results
  - Speed up process
  - Cost savings
  - Increased compliance
  - Increased output
  - IT systems documentation



Process Flows and Durations



Traditional Engine



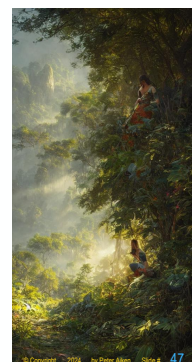


## Program Overview

- Data Management Overview
- What is Reference and MDM?
- Why is Reference and MDM important?

*Essential:  
Reference &  
Master Data*

- Reference & MDM Building Blocks
- Guiding Principles & Best Practices
- Take Aways, References & Q&A



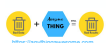
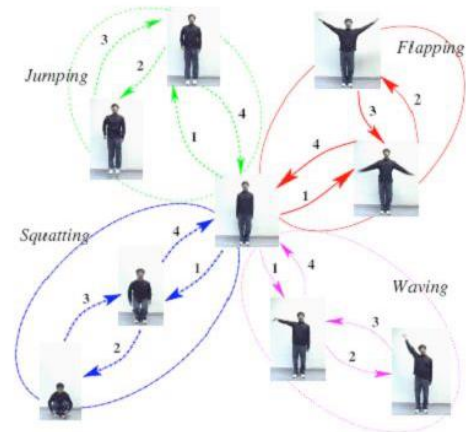
## Goals and Principles

1. Provide authoritative source of reconciled, high-quality master and reference data.
2. Lower cost and complexity through reuse and leverage of standards.
3. Support business intelligence and information integration efforts



## Reference & MDM Activities

- Understand reference and master data integration needs
- Identify master and reference data sources and contributors
- Define and maintain the data integration architecture
- Implement reference and master data management solutions
- Define and maintain match rules
- Establish “golden” records
- Define and maintain hierarchies and affiliations
- Plan and implement integration of new data sources
- Replicate and distribute reference and master data
- Manage changes to reference and master data



---

## Specific Reference and MDM Investigations

- Who needs what information?
- What data is available from different sources?
- How does data from different sources differ?
- How can inconsistencies be reconciled?
- How should valid values be shared?

**BE SPECIFIC**



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## Primary Deliverables

- Data Cleansing Services
- Master and Reference Data Requirements
- Data Models and Documentation
- Reliable Reference and Master Data
- "Golden Record" Data Lineage
- Data Quality Metrics and Reports



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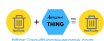
## Roles and Responsibilities

- Suppliers:
  - Steering Committees
  - Business Data Stewards
  - Subject Matter Experts
  - Data Consumers
  - Standards Organizations
  - Data Providers
  - ...
- Consumers:
  - Application Users
  - BI and Reporting Users
  - Application Developers and Architects
  - Data integration Developers and Architects
  - BI Vendors and Architects
  - Vendors, Customers and Partners
  - ...
- Participants:
  - Data Stewards
  - Subject Matter Experts
  - Data Architects
  - Data Analysts
  - Application Architects
  - Data Governance Council
  - Data Providers
  - Other IT Professionals
  - ...

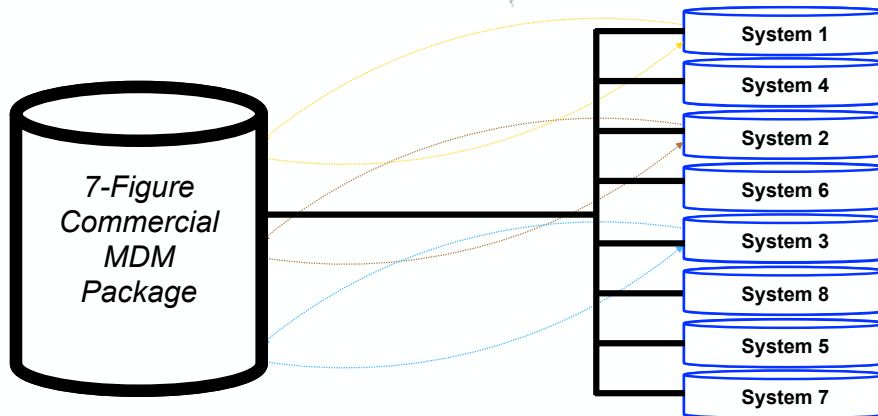


## Technology

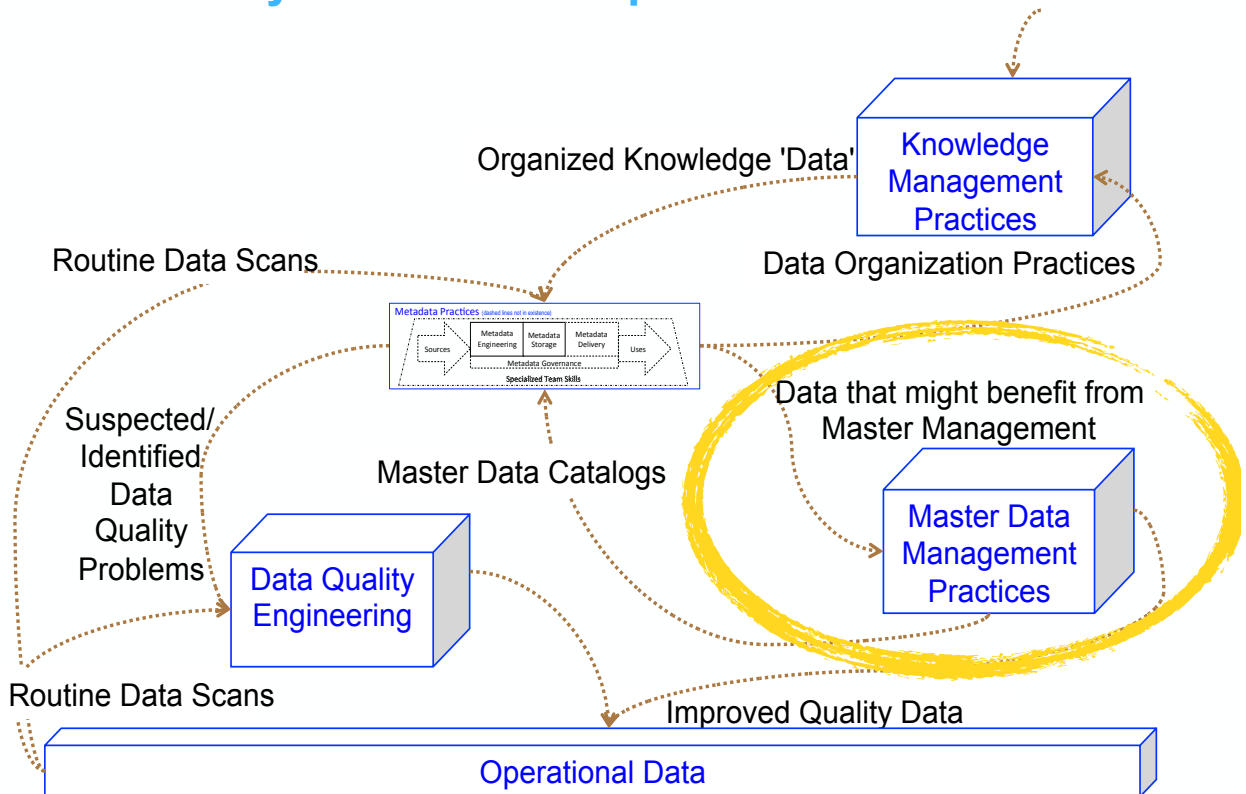
- ETL
- Reference Data Management Applications
- Master Data Management Applications
- Data Modeling Tools
- Process Modeling Tools
- Metadata Repositories
- Data Profiling Tools
- Data Cleansing Tools
- Data Integration Tools
- Business Process and Rule Engines
- Change Management Tools



# Build Your First MDM

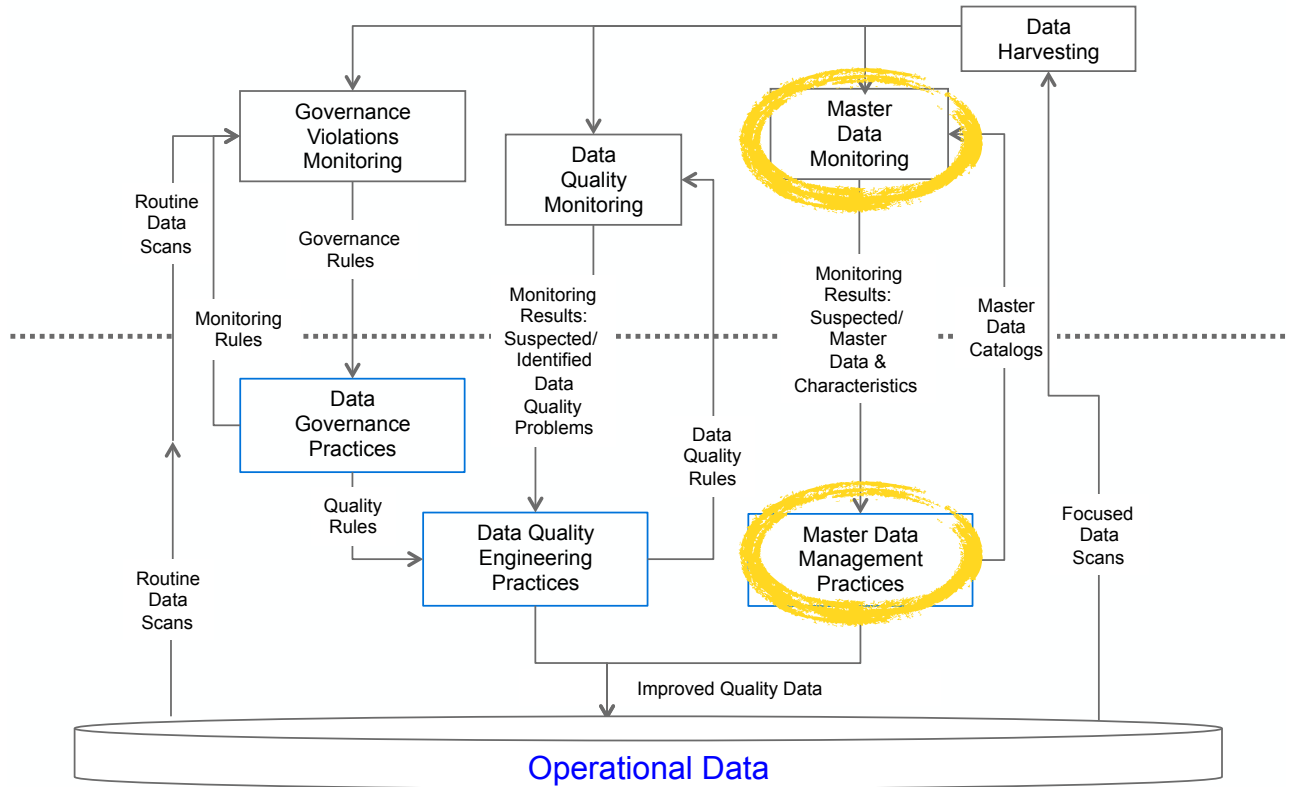


## Inextricably intertwined implementations and ...





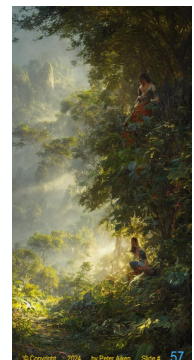
# Interactions



## Program Overview

- Data Management Overview
- What is Reference and MDM?
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- Reference & MDM Building Blocks
- Guiding Principles & Best Practices
- Take Aways, References & Q&A

*Essential:  
Reference &  
Master Data*



## "180% Failure Rate" Fred Cohen, Patni

- **99%** were less than fully satisfied with their Data Programs with a full **70%** even less than just satisfied  
They were more comfortable with the quality of their pricing data but much less about Market, Account and Customer data.
- **76%** cannot track and have no consolidated governance of their market/data spend and distribution. This also means they have limited control and understanding on how the consuming applications use the data thus any rationalization efforts are inhibited.
- **25%** of a clients Reference Data management spend is wasted on duplicated data, **74%** have silo data, expensive cleansing management and inefficient distribution  
Reference Data Management programs will be most active in Centralized Security masters and STP programs as well as better corporate actions processing and data scrubbing.
- Top motivators are by a far margin Risk reduction, followed by customer satisfaction, efficiency and then only decreased cost or increased revenue.
- Over **64%** are planning to re-architect their reference data in the near future
- Over half spend more than four million dollars a year on Reference Data. By applying the estimated **25%** inefficiencies reference Data management programs can clearly self fund initiatives.

Company Confidential

4

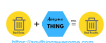
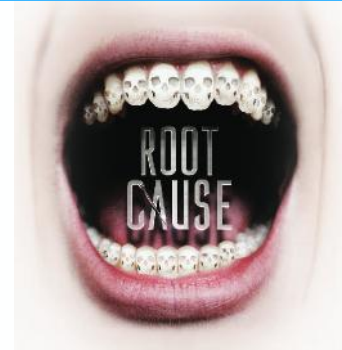
<http://www.igatepatni.com/bfs/solutions/payments.aspx>



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## MDM Failure Root-Causes

- 30% of MDM programs are regarded as failures
- 70% of SOA projects in complex, heterogeneous environments had failed to yield the expected business benefits unless MDM is included
- Root-causes of failures:
  - 80% percent of MDM initiatives fail because of ineffective leadership, underestimated magnitudes or an inability to deal with the cultural impact of the change
  - MDM was implemented as a technology or as a project
  - MDM was an Enterprise Data Warehouse (EDW) or an ERP
  - MDM was an IT Effort
  - MDM is separate to data governance and data quality
  - MDM initiatives are implemented with inappropriate technology
  - Internal politics and the silo mentality impede the MDM initiatives



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## 15 MDM Success Factors



1. Success is more likely and when users and prospects understand MDM limitations/strengths.
2. Taking small steps and remaining educated will increase longer-term success with MDM.
3. Set the right expectations.
4. Long-term MDM success requires information architecture.
5. Create incentives to ensure that manage master data is desirable.
6. Strong alignment with the organization's business vision, will underpin MDM success.
7. Use a framework through all stages of the MDM program — strategize, evaluate, execute and review.
8. Gain high-level business sponsorship and build strong stakeholder support.
9. Creating an MDM vision and a strategy aligned to the organization's business vision.
10. Use MDM metrics to communicate success and measure progress.
11. Use a business case to increase business engagement.
12. Get the business to propose and own the KPIs.
13. Measure the situation before and after.
14. Translate the change in metrics into financial results.
15. Achieve a single view of master data



[Source: unknown]



<https://anyringstone.com>

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## 10 Best Practices for MDM

- Active, involved executive sponsorship
- The business should own the data governance process and the MDM or CDI project
- Strong project management and organizational change management
- Use a holistic approach - people, process, technology and information
- Build your processes to be ongoing and repeatable, supporting continuous improvement
- Management needs to recognize the importance of a dedicated team of data stewards
- Understand your MDM hub's data model and how it integrates with your internal source systems and external content providers
- Resist the urge to customize
- Stay current with vendor-provided patches
- Test, test, test and then test again.



<https://www.ase.org.uk/bestpractice>



<https://anyringstone.com>

Source:<http://www.mdmsource.com/master-data-management-tips-best-practices.html>

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# GUIDING PRINCIPLES

1. Shared R/M data belong to the organization
2. R/M data management is an on-going data quality improvement program – goals cannot be achieved by 1 project alone.
3. Business data stewards are the authorities accountable at determining the golden values.
4. Golden values represent the "best" sources.
5. Replicate master data values only from golden sources.
6. Reference data changes require formal change management



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a great customer experience starts with excellent data

previously information was stored in hundreds of databases across BT

## Seven Sisters (from British Telecom)

now we are sorting all of our data

Pricing User Customer Contract  
Revenue Product Inventory



<https://anythingawesome.com/sevensistersvideo.html>

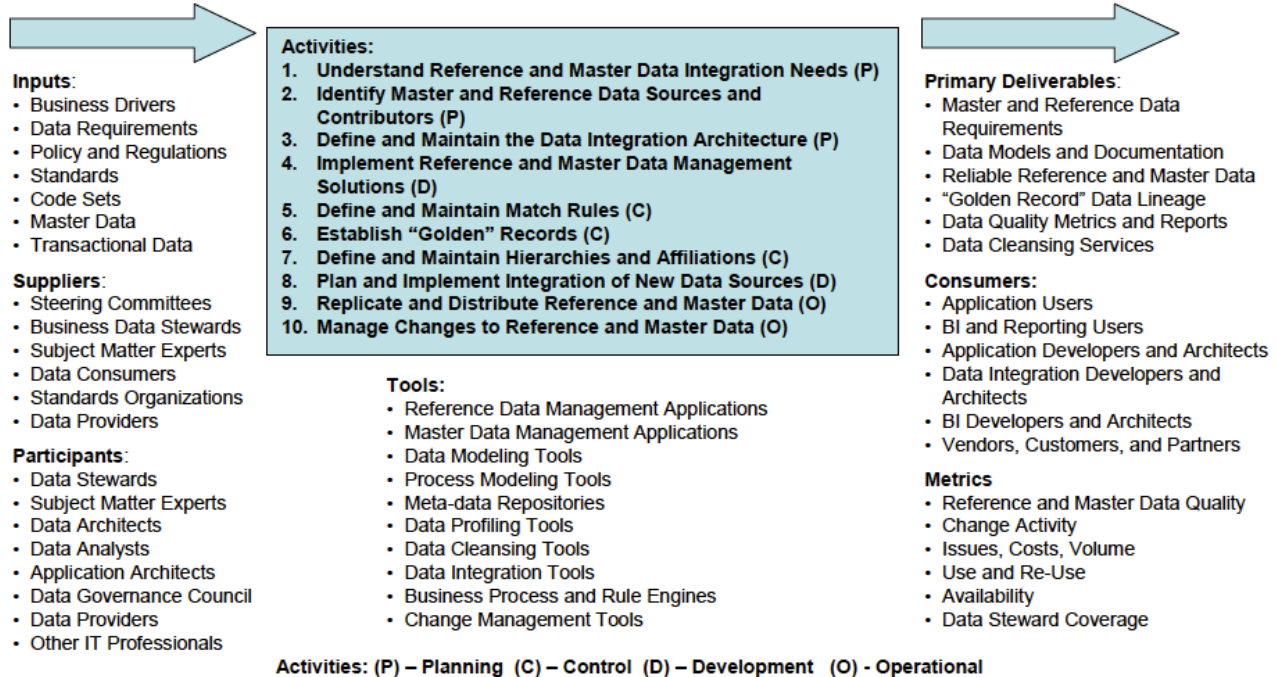
Thanks to Dave Evans

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**Definition:** Planning, implementation, and control activities to ensure consistency with a “golden version” of contextual data values.

**Goals:**

1. Provide authoritative source of reconciled, high-quality master and reference data.
2. Lower cost and complexity through reuse and leverage of standards.
3. Support business intelligence and information integration efforts.



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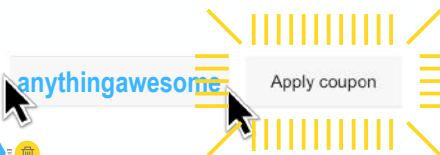
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## Upcoming Events

The Core Concepts of Data Ethics  
14 May 2024



Key Elements of a Successful Data Governance Program

11 June 2024

**Time: 19:00 UTC (2:00 PM NYC) | Presented by: Peter Aiken, PhD**

Data Modeling Types:  
Conceptual, Physical, Logical

9 July 2024

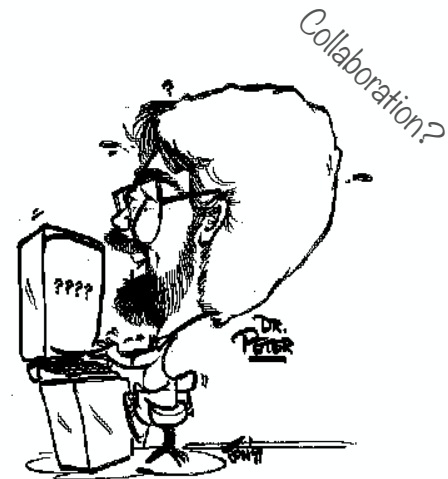
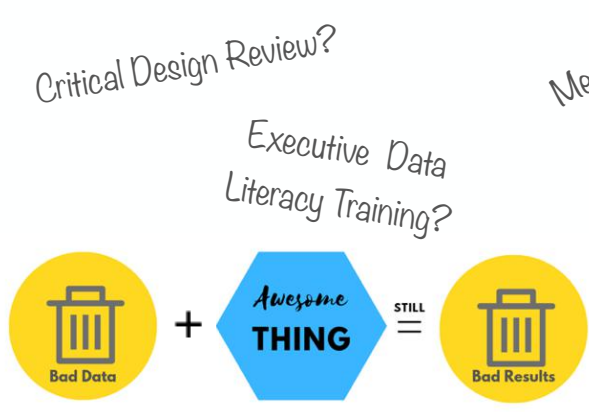
Brought to you by:



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Reverse Engineering Expertise?

Hiring Assistance?

# Thank You!

Use your data more strategically?

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Book a call with Peter to discuss anything - <https://anythingawesome.com/OfficeHours.html>

