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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions.

The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

The background is a dark, abstract composition. It features several bright, glowing streaks of red and yellow light that curve and flow across the frame, suggesting speed and data movement. In the upper left, there is a faint, stylized bar chart with several vertical bars of varying heights. The overall aesthetic is high-tech and futuristic.

Magdalena Bartnik
Ugo Pollio

Oracle Data Integration Platform
Moving Data
to Transform Business

ORACLE



Program Agenda

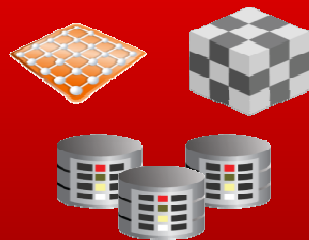
- Three New Disruptors in Data Integration
 - Zero Downtime and Continuous Availability
 - Real-time Analytics
 - Trusted Business Insight
- GG, ODI & EDQ
- Putting it all Together
- Architecture Principles and Best Practices
- Use cases

New Requirements in Data Integration

**Any Data,
Any Source**



**Zero Downtime,
High Availability**



**Real-time
Analytics**



**Trusted
Business Insight**



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Big Data Drives Big Benefits

**Any Data,
Any Source**



Your Data:
*Decisions based on
your data*

Big Data:
*Decisions based on **all**
data **relevant** to you*

Transactions

Oracle



SAP

Documents



Social Data



Machine-Generated Data

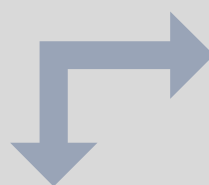
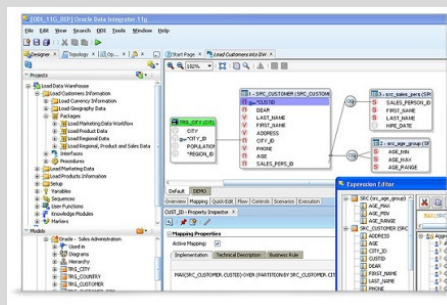


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Oracle Strategy for Integrating Big Data

Oracle Data Integrator and Big Data Connectors

**Any Data,
Any Source**



**Bulk Data,
E-LT**

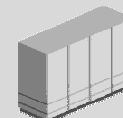


OLTP

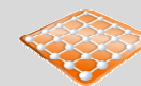
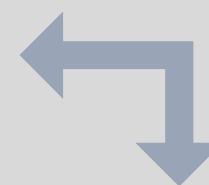


OLAP

**Big Data
Transformation**



Legacy

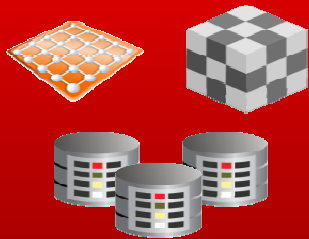


Unstructured

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Convergence of Real-time and Availability

**Zero Downtime,
High Availability**



To supply real-time data
source systems have to
be **continuously available**

**Real-Time
Enterprise**

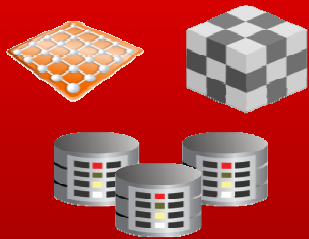
Systems that require 24/7
availability contain critical data
to be shared **in real time**

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Oracle GoldenGate

Real-time Data Integration and Continuous Availability

**Zero Downtime,
High Availability**



SIEBEL

J D EDWARDS

ORACLE
E-BUSINESS SUITE 12

ORACLE
FUSION APPLICATIONS

PeopleSoft®

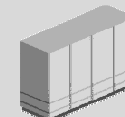
SAP



OLTP



OLAP



Legacy

- Log-based change data capture, distribution, transformation, and delivery
- Supports heterogeneous databases and operating systems
- Bidirectional replication without distance limitation
- Transactional integrity. Reliable data delivery and fast recovery after interruptions

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Oracle GoldenGate 11gR2

Real-time Data Integration and Continuous Availability

GoldenGate 11gR2



Integrated Capture

Enhanced Conflict Detection & Resolution

Security & Performance






Monitoring, Management

Expanded Heterogeneity (iSeries)

- Efficiently capture changed data in high-volume and high-throughput implementations
- Optimized for Oracle Database 11g and Oracle Exadata environments
- Reduce the time required to detect and resolve data conflicts
- Increased support for business-critical and heterogeneous systems

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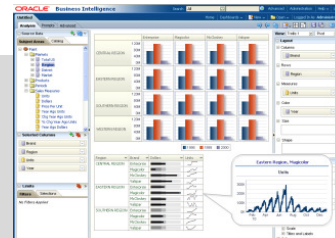
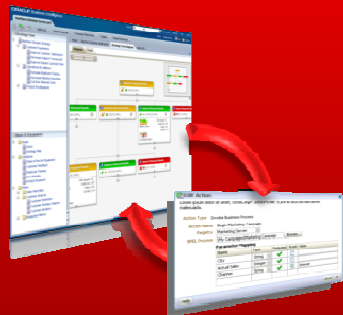
GoldenGate 11gR2 Differentiator: Heterogeneity

Databases	O/S and Platforms
<p><u>Oracle GoldenGate Capture and Delivery:</u></p> <ul style="list-style-type: none">▪ Oracle▪ DB2▪ Microsoft SQL Server▪ Sybase ASE▪ Teradata▪ Enscribe▪ SQL/MP▪ SQL/MX▪ MySQL v 5.5 ▪ JMS message queues <p><u>Oracle GoldenGate Delivery:</u></p> <ul style="list-style-type: none">▪ All listed above, plus:▪ TimesTen, Postgres ▪ Netezza, Greenplum, HP Neoview▪ ETL products	<p>Linux </p> <p>Sun Solaris v11</p> <p>Windows 2000, 2003, XP</p> <p>HP NonStop</p> <p>HP-UX </p> <p>IBM AIX v7.1</p> <p>IBM z Series</p> <p>zLinux</p> <p>IBM i Series </p>

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Oracle Strategy for Real-time Analytics

Real-time Analytics



Business Analytics

Data Quality (Product & Customer Data)

Real-time
Replication

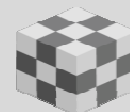
Bulk Data,
E-LT

Big Data
Transformation

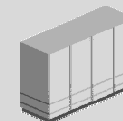
Data Services,
Federation



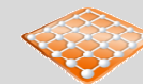
OLTP



OLAP



Legacy



Unstructured

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Real Time Analytics

Delivering maximum performance at a lower cost



Decrease batch windows for data acquisition

Enable efficiency

“Active” vs “Archive” data

Business Decision happen in Real-Time

Reliable data, trustable insights

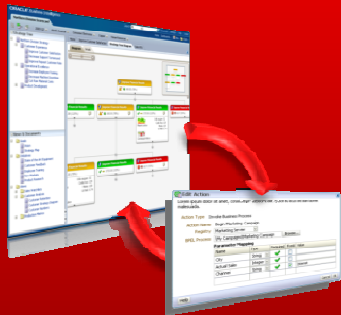
- Moving towards the real-time enterprise via real-time data delivery
- Optimized for Oracle Database 11g and Oracle Exadata environments
- Handles continuous data loading while users run reports
- Efficiently capture changed data in high-volume and high-throughput implementations
- Transform data into valuable information

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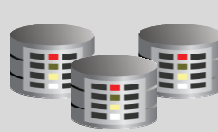
Real Time Analytics

Delivering maximum performance at a lower cost

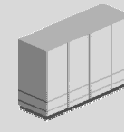
Real-time Analytics



Real-time
Replication



OLTP



Legacy

- Super fast data refresh: **GoldenGate** for real-time replication
- Super Fast data movement : **Data Integrator** for Movement & Transformation
- Fast Aggregates and view refresh: In-memory optimizations in Times Ten

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How Oracle GoldenGate Works

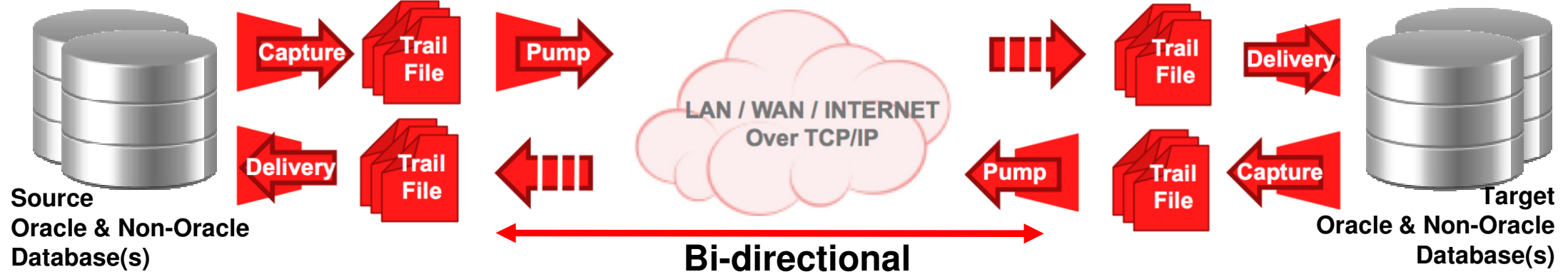
Capture: committed transactions are captured (and can be filtered) as they occur by reading the transaction logs.

Trail: stages and queues data for routing.

Pump: distributes data for routing to target(s).

Route: data is compressed, encrypted for routing to target(s).

Delivery: applies data with transaction integrity, transforming the data as required.

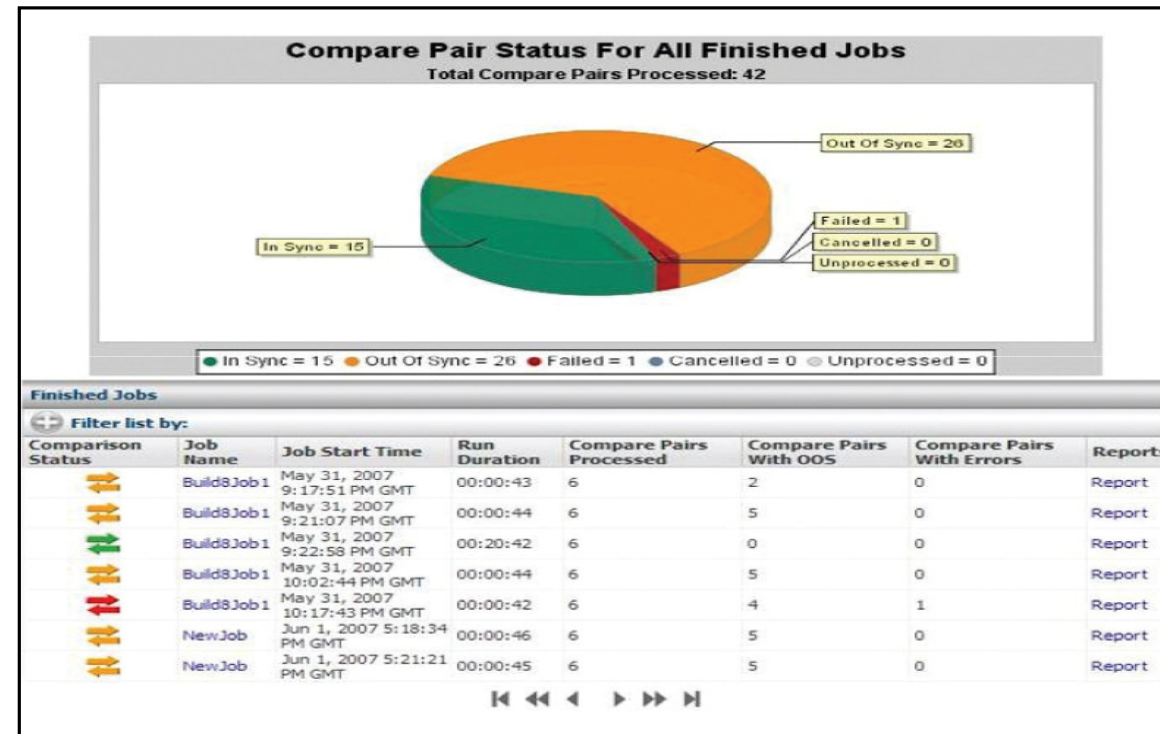


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Oracle GoldenGate Veridata

Data Comparison without Downtime

- A high-speed, low impact data comparison solution
 - Identifies and reports data discrepancies between heterogeneous databases without interrupting their availability
- Benefits:
 - Reduce financial/legal risk exposure
 - Speed and simplify IT work in comparing data sources
 - No disruption to business systems
 - Improved failover to backup systems
 - Confident decision-making and reporting

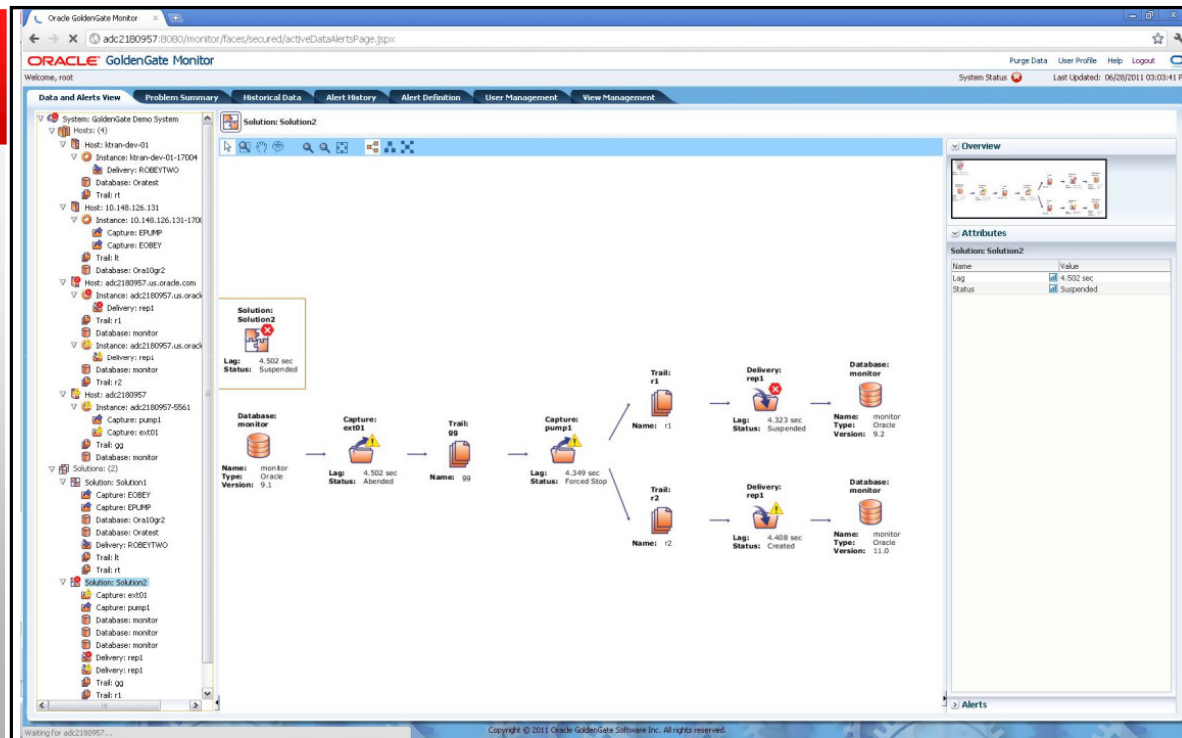


Management Pack for Oracle GoldenGate

Monitoring

Oracle GoldenGate Monitor

- Advanced monitoring, alerting (SNMP support), lag graphs, and historical repository.
- Based on new agent infrastructure, which will be the foundation for all future integration projects. Supports GoldenGate 11.1.1.1.1+

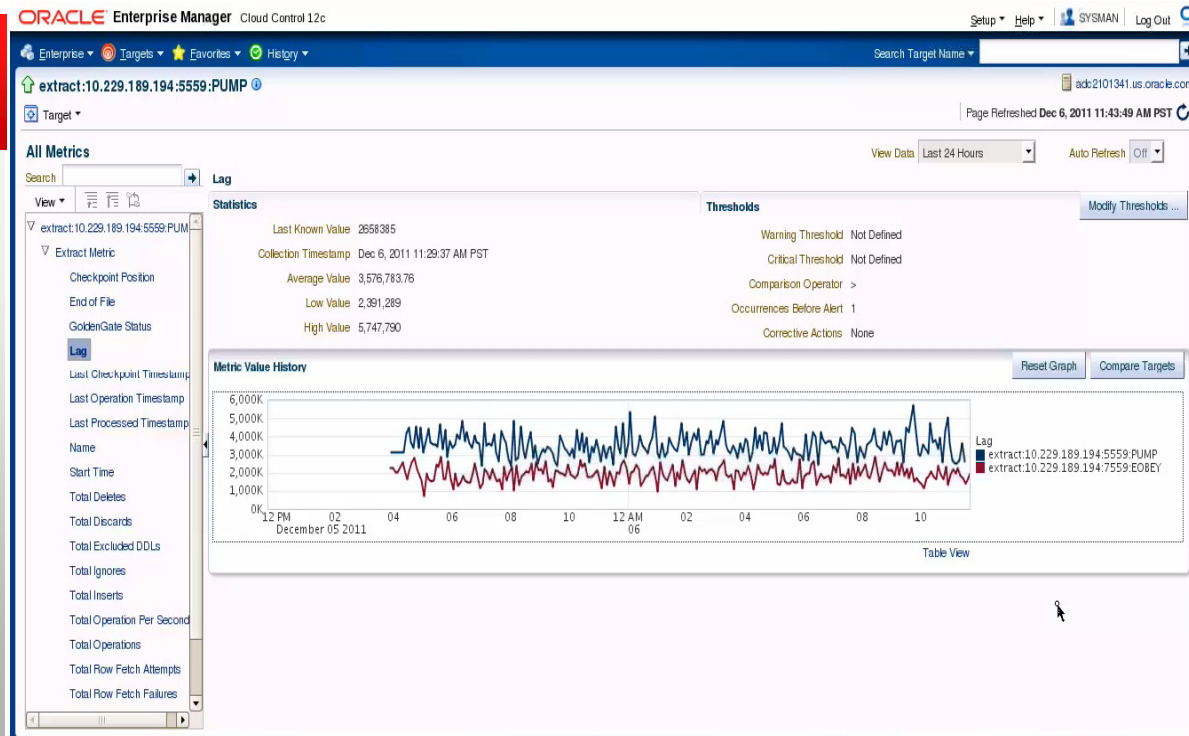


Management Pack for Oracle GoldenGate

Monitoring

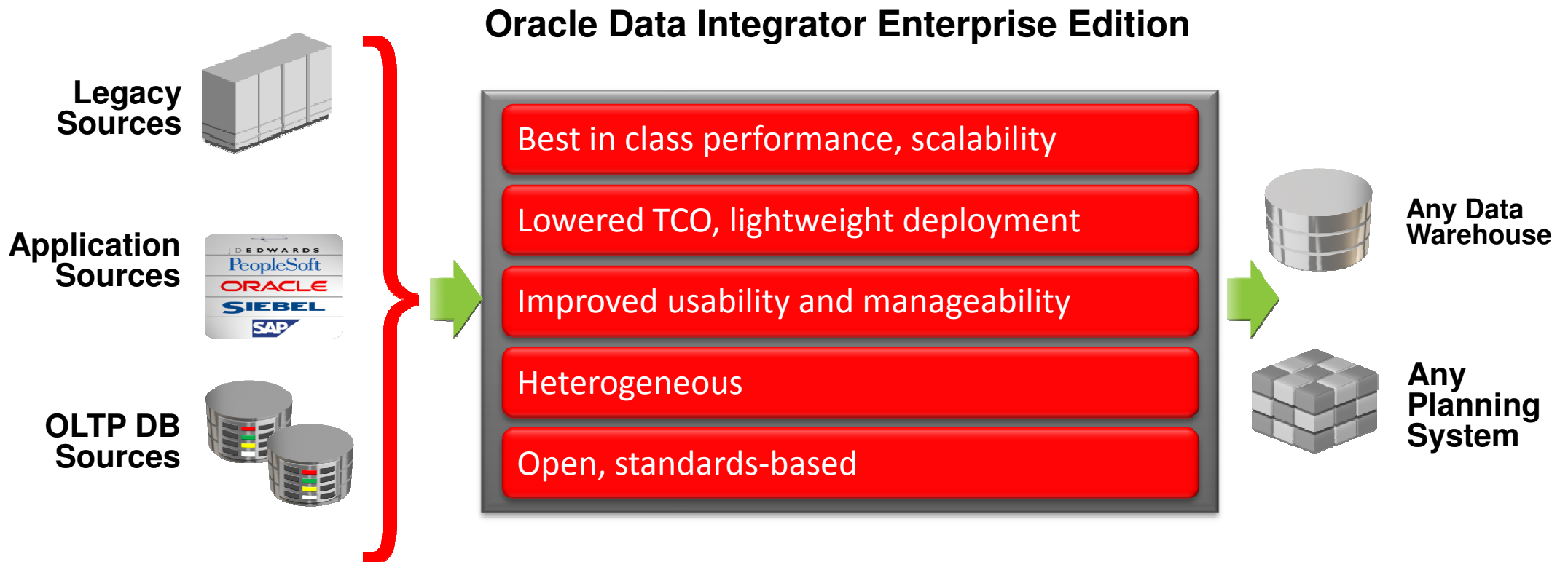
Enterprise Manager Plug-in

- Oracle Preferred monitoring tool, covers entire Oracle stack – Database, Storage, FMW etc
- For customers, who prefers to drill into DB sessions, OS stats, etc, apart from monitoring GoldenGate process
- Included in Management Pack



Oracle Data Integrator 11g

Fastest ETL/E-LT, Simpler Time-to-Value, Lowest TCO



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ODI – Oracle's Strategic ELT/ETL

ODI is Faster

- Fastest E-LT Bulk/Batch Performance
- Faster Real Time integration (sub-second) with CDC, Replication, and SOA
- Faster Project Setup, Design and Delivery

ODI is Simpler

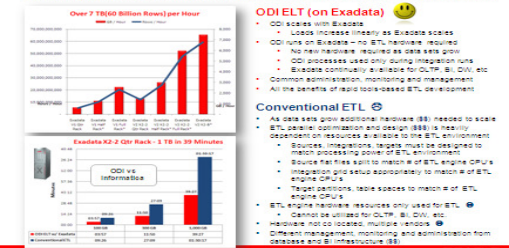
- Simpler Setup, Configuration, Management, and Monitoring
- Simpler way to do Mapping using Declarative SQL Interfaces
- Simpler Deployment with Fewer Hardware Devices
- Simpler extensibility with Knowledge Module code templates

ODI is Saves Money (Lower TCO, Higher ROI)

- Less Hardware & Energy Costs with E-LT Architecture
- Less Time Wasted on Unnecessary ETL Mappings, Scripting, and Training
- Less Integration Overhead Integrating with Applications, SOA, and Management

ODI is Faster

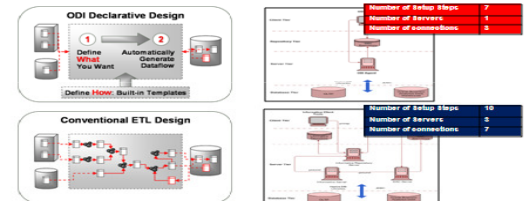
Up to 7TB per hour of real world data loading and complex transformations



ODI is Simpler

Speed Project Delivery and Time to Market with ODI

- Development Productivity
- 40% Efficiency Gains
- Environment Setup (ex: BI Apps)
- 33-50% Less Complex



ODI Saves Money

E-LT Runs on Existing Servers with Shared Administration

Typical: Separate ETL Server

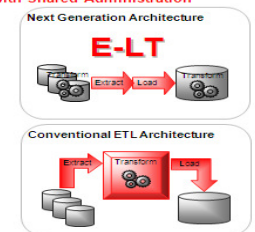
- Proprietary ETL Engine
- Expensive Manual Parallel Tuning
- High Costs for Standalone Server

ODI: No New Servers

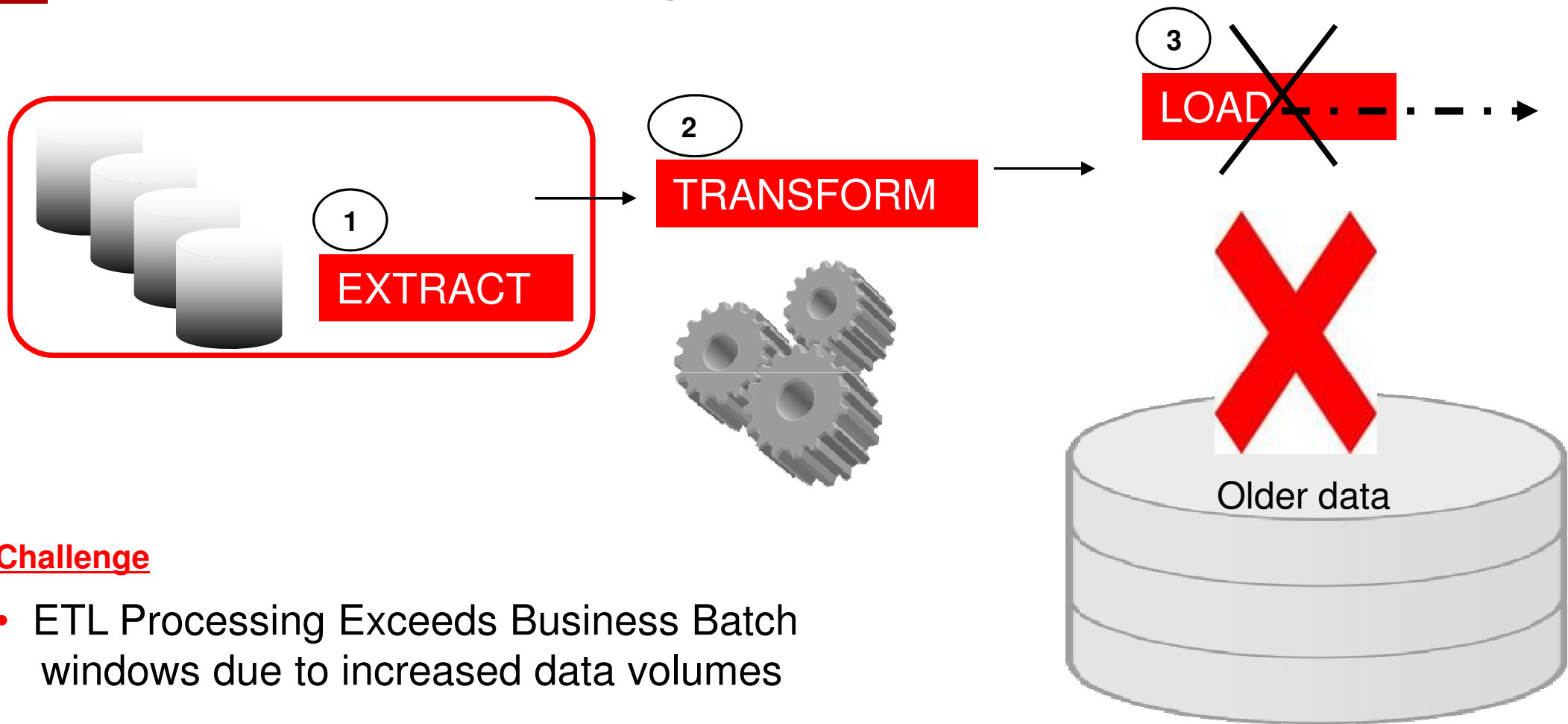
- Lower Cost: Leverage Compute Resources & Partition Workload efficiently
- Efficient: Exploits Database Optimizer
- Fast: Exploits Native Bulk Load & Other Database Interfaces
- Scalable: Scales as you add Processors to Source or Target
- Manageability: unified Enterprise Manager

Benefits

- Better Hardware Leverage
- Easier to Manage & Lower Cost
- Simple Tuning & Linear Scalability



Problem - Shrinking ETL Batch Windows



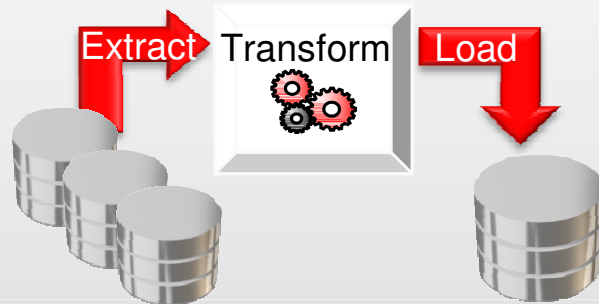
Challenge

- ETL Processing Exceeds Business Batch windows due to increased data volumes

Optimized Data Loading through E-LT

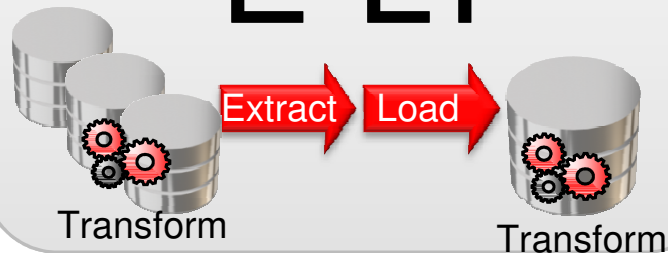
- The key to improved performance and reduced costs

Conventional ETL Architecture



Next Generation Architecture

“E-LT”



- E-LT provides flexible architecture for optimized performance
- Benefits
 - Leverage Set-based transformations
 - Improved performance for loading, no network hop
 - Takes advantage of existing hardware

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ODI-EE Declarative Design

- **Improved Developer Productivity and Lower Maintenance Costs**

Specify ETL Data Flow Graph

- Developer must define every step of Complex ETL Flow Logic
- And significant development and maintenance efforts

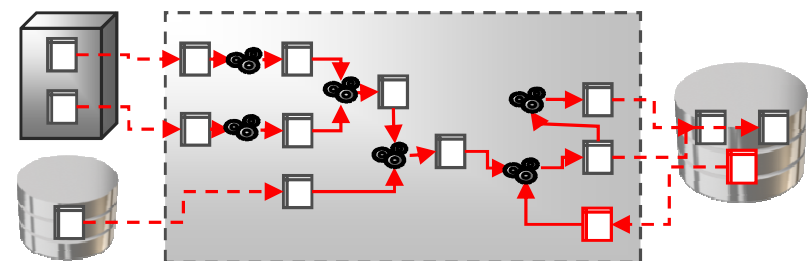
Declarative Set-based Design

- Simplifies the number of steps
- Automatically generates the Data Flow whatever the sources and target DB

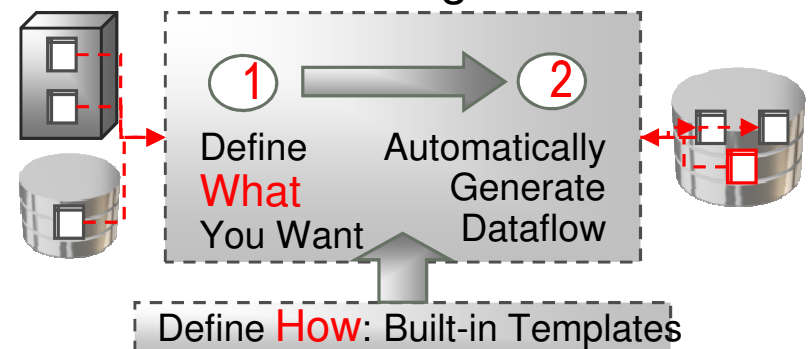
Benefits

- ✓ Significantly reduce the learning curve
- ✓ Shorter implementation times
- ✓ Streamline access to non-IT pros

Conventional ETL Design



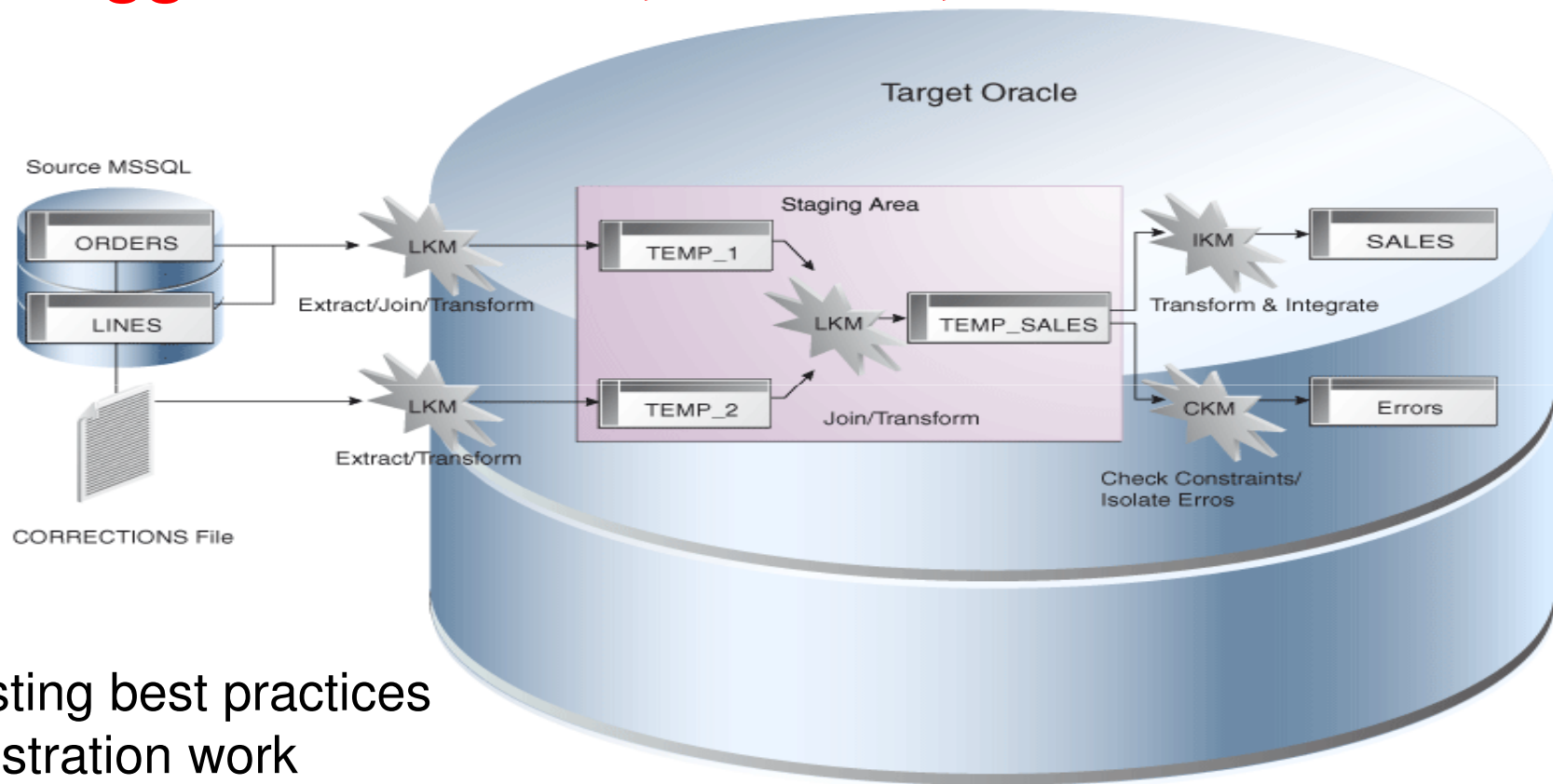
ODI Declarative Design



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Knowledge Modules

Hot-Pluggable: Modular, Flexible, Extensible

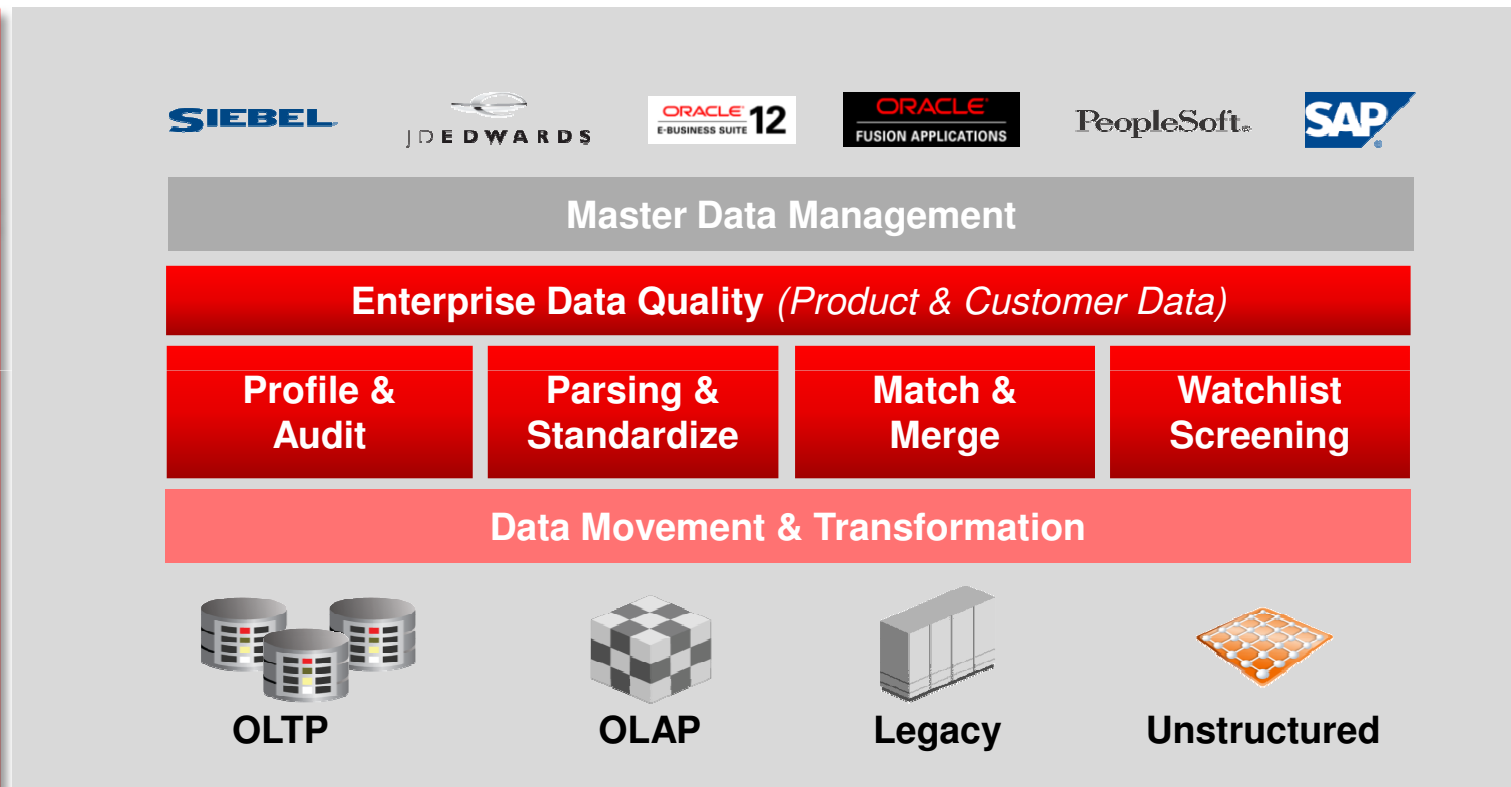


Benefits

- ✓ Tailor to existing best practices
- ✓ Ease administration work
- ✓ Reduce cost of ownership

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Trusted Business Insight with EDQ



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Practical Applications and Value Drivers of DQ

Revenue Generation & Customer Retention

Cross-Sell /
Up-Sell



Differentiated
Service Delivery



Better Operations

1st Time Accurate
Deliveries



Accelerate New
Product Introduction

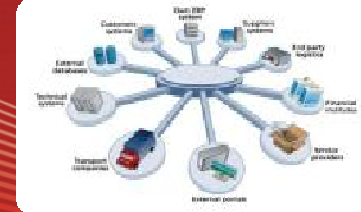


IT Agility

Lower Operations
& IT Costs



Accelerate New
IT Projects



Risk Management & Compliance

Law Enforcement
/ Privacy



Fraud Prevention /
Compliance



DQ/MDM as...

Foundation or Rationalization for CRM

An add-on to CRM or ERP

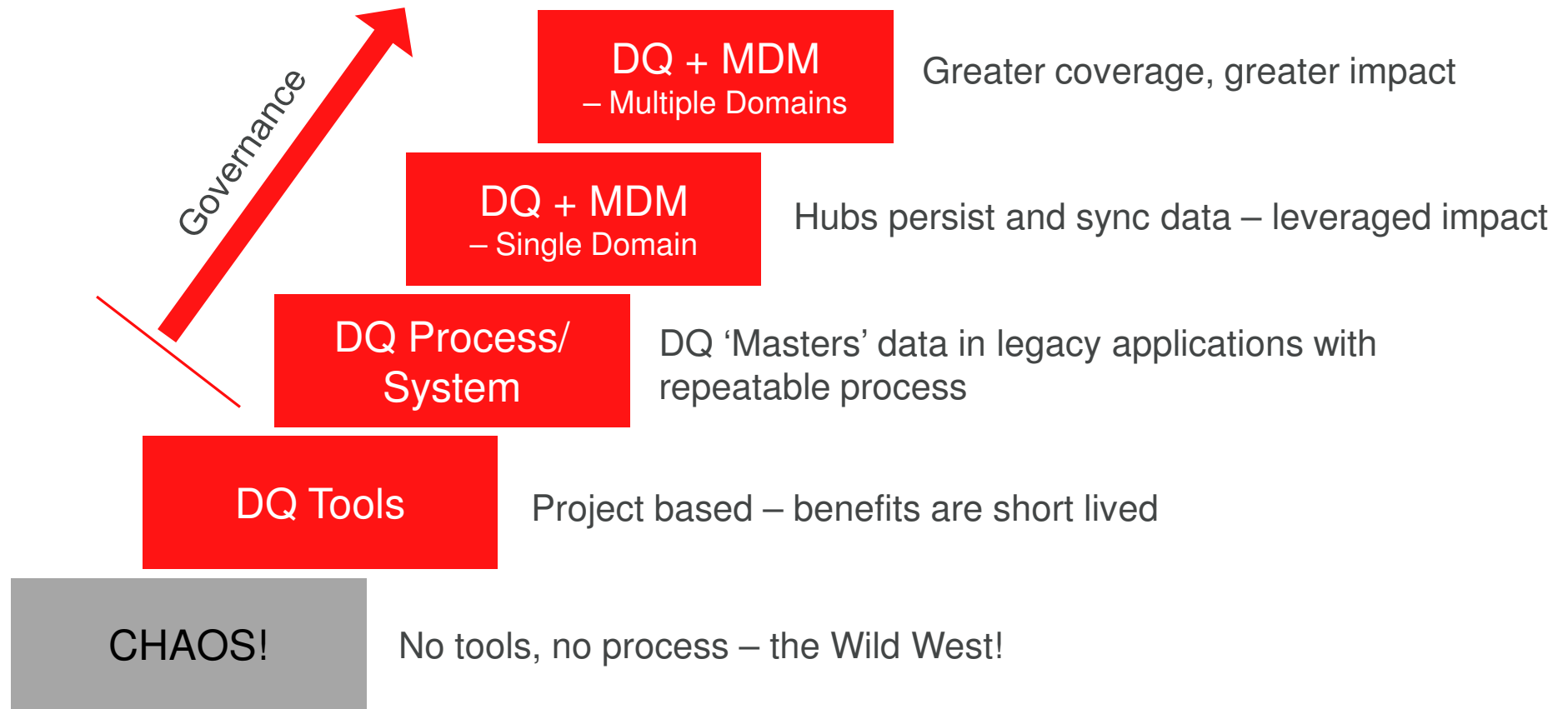
Technology Foundation

Foundation or Rationalization for SCM/ ERP/Fulfillment

Marketing/ Compliance Application

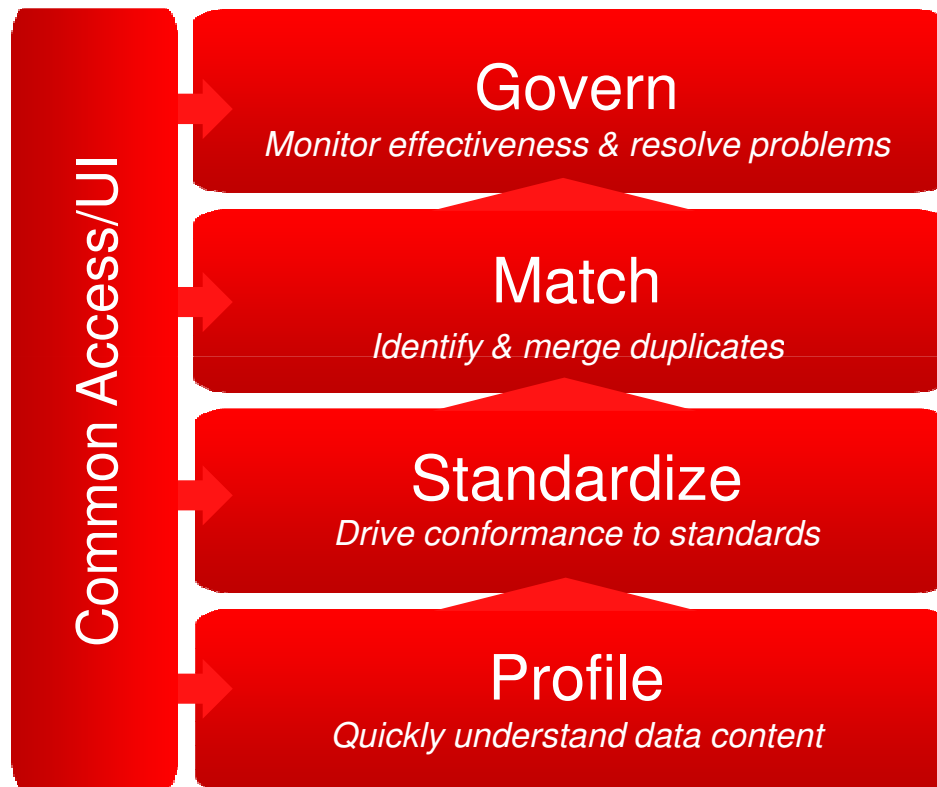
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Data Quality Maturity Progression



Enterprise Data Quality

Integrated Solution for All Data Quality Problems



Broadest DQ offering

- Best of breed capabilities for both **Party Data** and **Product Data**
- Profiling, standardization, matching, case management, governance

Most usable DQ offering

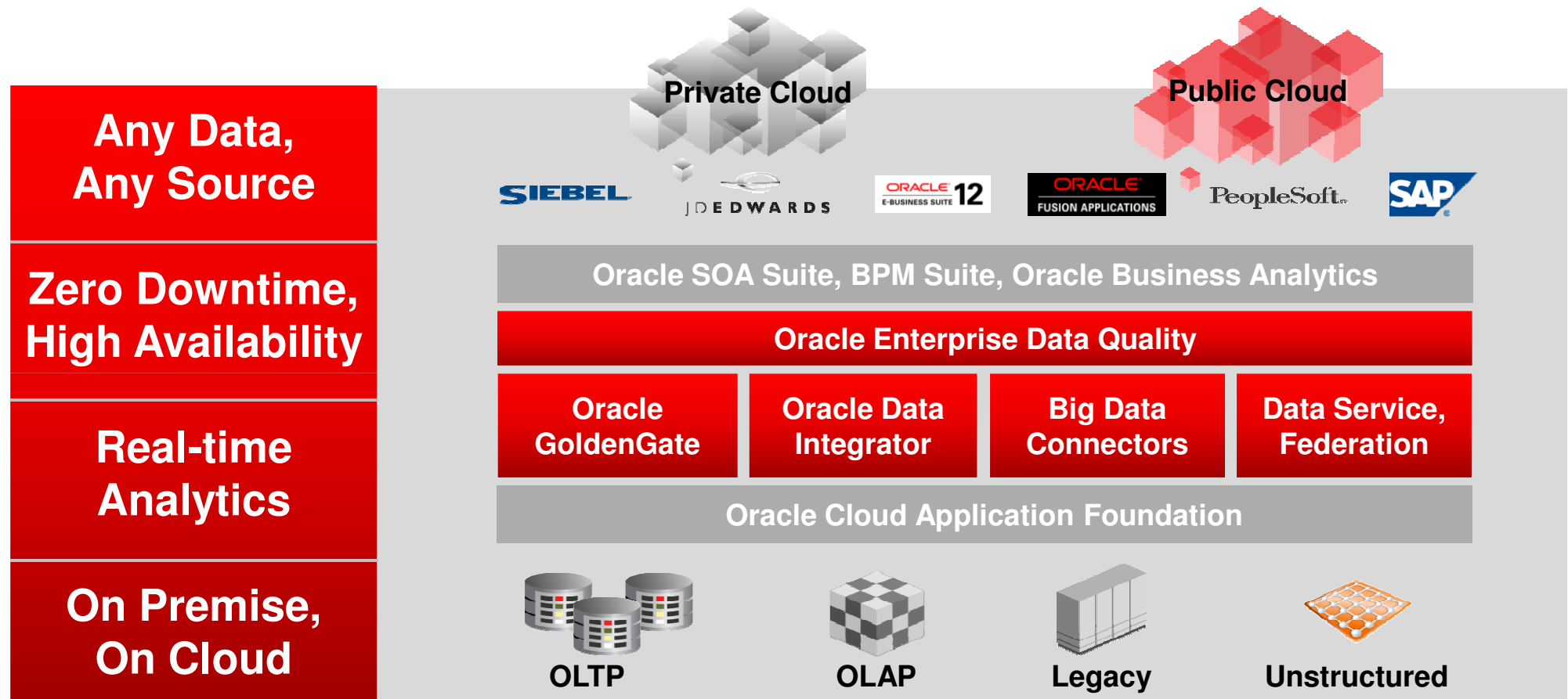
- Completely integrated offering – designed to work together
- Designed for business and technical users
- Transparent operation and results – no black boxes

Pervasive operation for **enterprise quality governance**

- Within legacy systems and MDM Hubs
- As part of migration/system load
- On data entry/capture
- As part of data movement/transfer

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Putting it all Together: Oracle Data Integration



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Oracle Engineered Systems

**Any Data,
Any Source**

**Zero Downtime,
High Availability**

**Real-time
Analytics**

**Trusted
Business Insight**

Oracle Exalytics In-Memory Machine



- Oracle BI
- Oracle TimesTen
- Oracle Essbase
- Oracle Endeca

Oracle Exadata



- Oracle Database
- Exadata Software
- Advanced Analytics

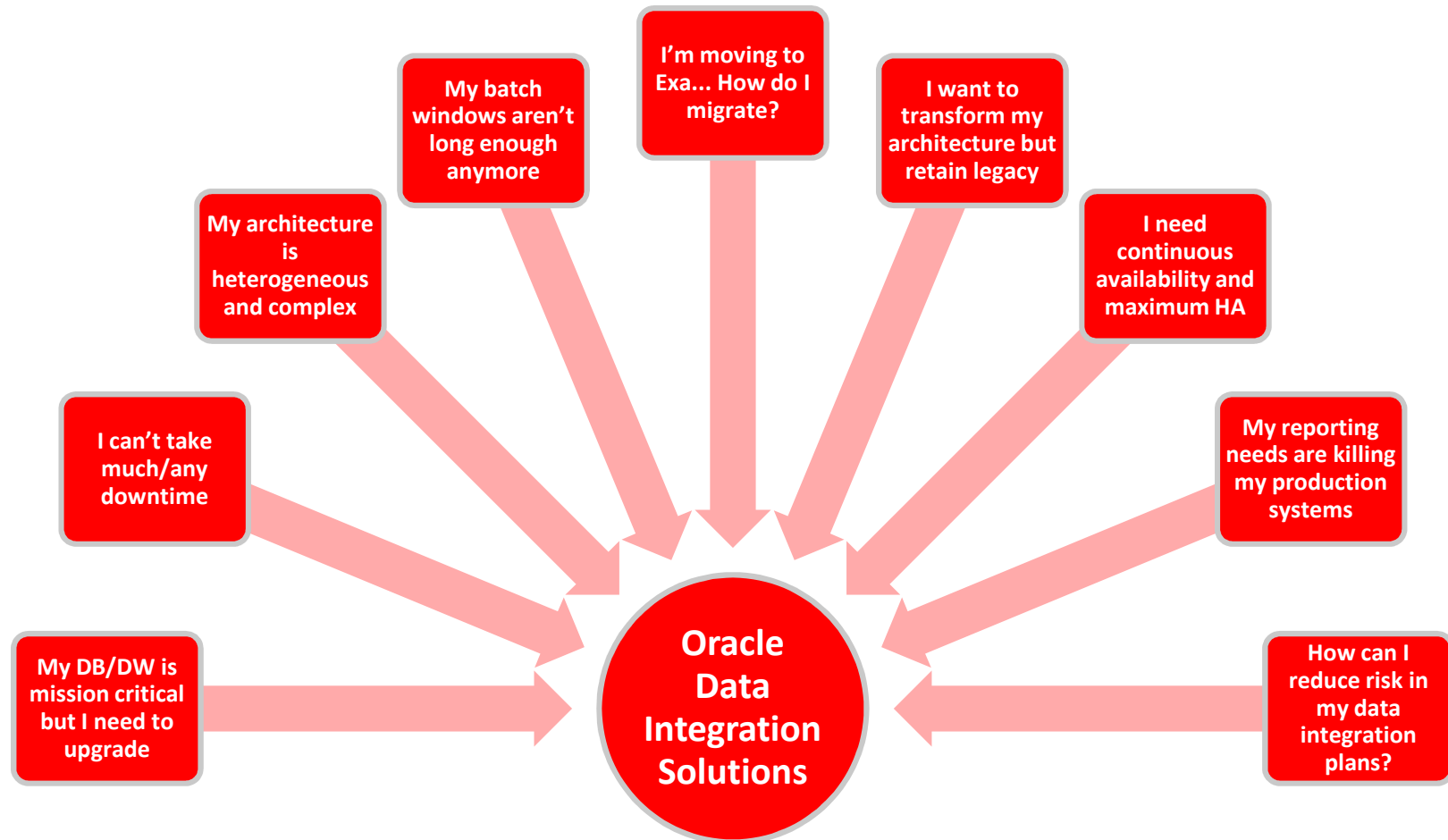
Oracle Big Data Appliance



- Oracle NoSQL
- Oracle R
- Apache Hadoop

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If you recognize your company in one of this questions...it's time to contact us



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Architecture Principles and Best Practices



Your Enterprise Architecture

An Architects Approach to Emerging Areas

- **Addresses Solution**

- Feasibility
- Time
- Cost

- **Addresses Goals**

- Aligned to Value
- Leverages Processes
- Leverages Infrastructure

- **Addresses Risks**

- Skills
- Experience
- Investment

The Information Architecture Spectrum

Evaluating Economic and Architecture Tradeoffs

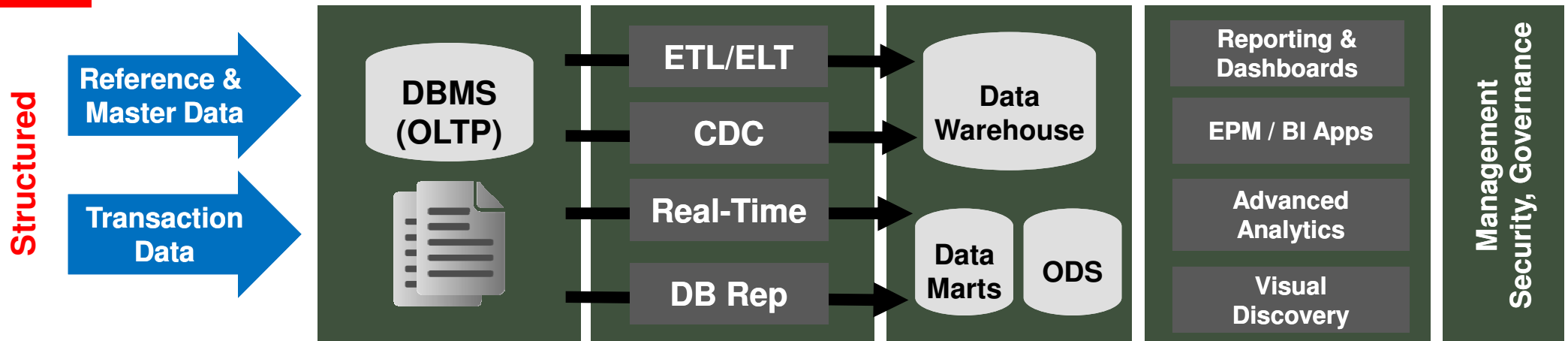
Data Realms	Structure	Volume	Security	Storage & Retrieval	Modeling	Integration	Consumption
Master data Transactions Analytical data Metadata	Structured	Medium - High	Database, app, & user access	RDBMS / SQL	Pre-defined relational or dimensional modeling	ETL/ELT, CDC, Replication, Message	BI & Statistical Tools, Operational Applications
Reference data	Structured and Semi-Structured	Low-Medium	Platform security	XML / xQuery	Flexible & Extensible	ETL/ELT, Message	System-based data consumption
Documents and Content	Unstructured	High	File system based	File System / Search	Free Form	OS-level file movement	Content Mgmt

The Information Architecture Spectrum

Evaluating Economic and Architecture Tradeoffs

Data Realms	Structure	Volume	Security	Storage & Retrieval	Modeling	Integration	Consumption
Master data Transactions Analytical data Metadata	Structured	Medium - High	Database, app, & user access	RDBMS / SQL	Pre-defined relational or dimensional modeling	ETL/ELT, CDC, Replication, Message	BI & Statistical Tools, Operational Applications
Reference data	Structured and Semi-Structured	Low-Medium	Platform security	XML / xQuery	Flexible & Extensible	ETL/ELT, Message	System-based data consumption
Documents and Content	Unstructured	High	File system based	File System / Search	Free Form	OS-level file movement	Content Mgmt
Big Data - Weblogs - Sensors - Social Media	Structured, Semi-Structured, Unstructured	High	File system & database	Distributed FS / noSQL	Flexible (Key Value)	Hadoop, MapReduce, ETL/ELT, Message	BI & Statistical Tools

Traditional Information Architecture



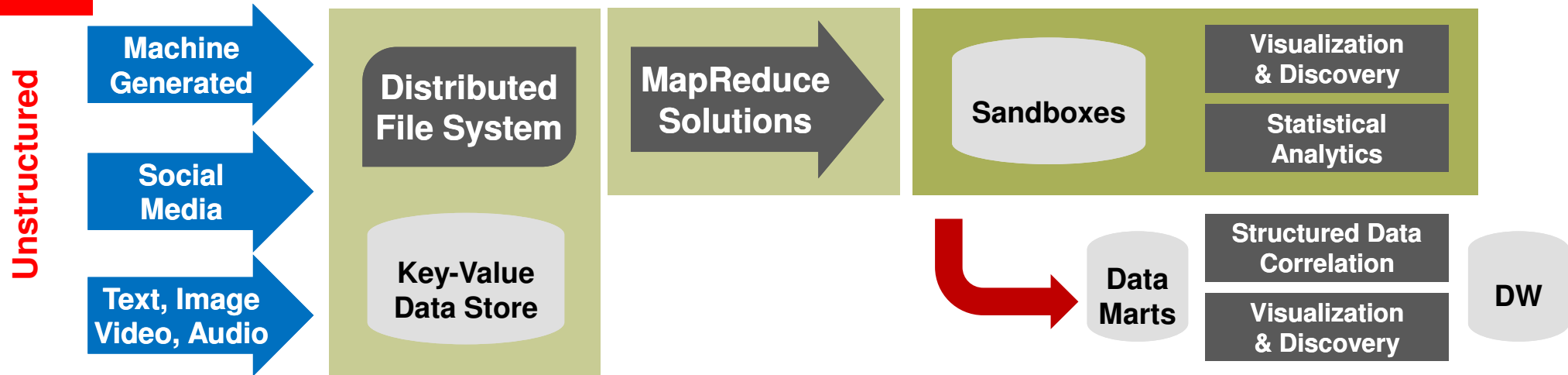
Key Architecture Principles

- Treat Data as an Asset
- Quality, Timeliness, Accuracy
- Information Metadata

Key EA Responsibility

- Governance
 - Center of Excellence, Training
 - Technical Standards
- Transparency, Compliance

Big Data Information Architecture



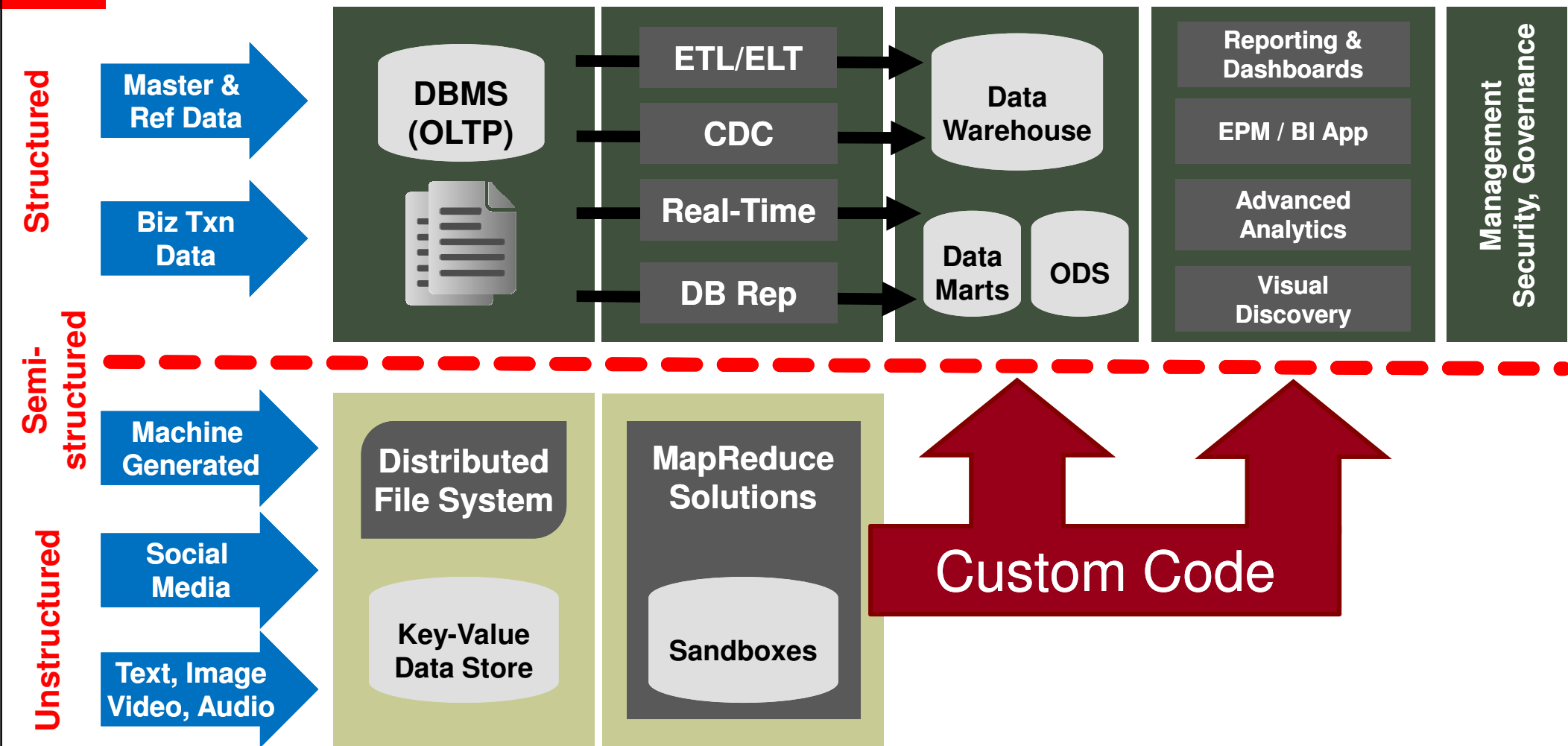
Key Architecture Principles

- Treat Data as an Asset
 - Low density, variable schema
- Quality, Timeliness, Accuracy
 - Drive to zero latency
- Information Metadata
 - Privacy

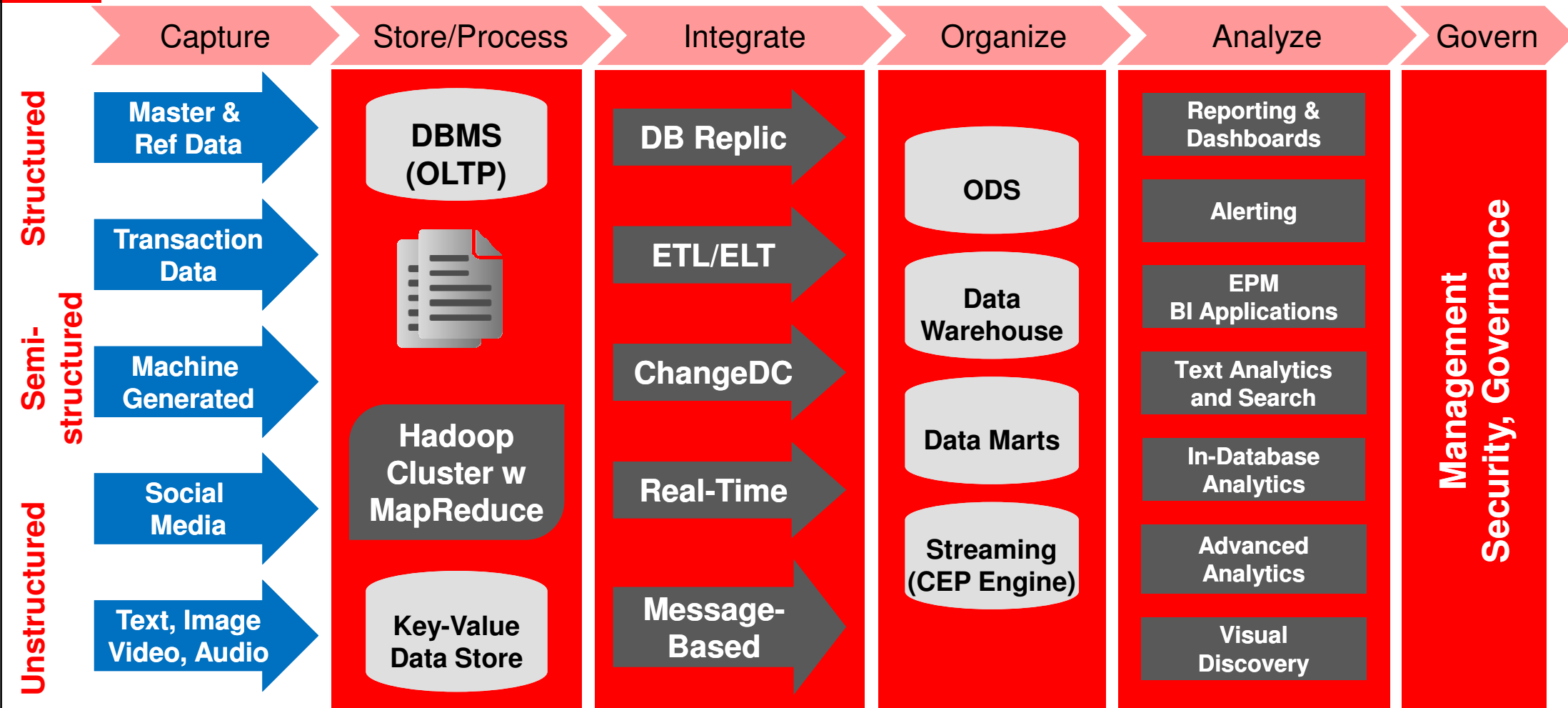
Key EA Responsibility

- Governance
 - Center of Excellence, Training
 - Technical Standards
- Transparency, Compliance

The Big Data Divide



Driving to an Integrated Architecture



Best Practices

Adopt an Enterprise Architecture Approach

- Align Big Data initiative with specific business goals
- Ensure centralized IT strategy for standards and governance
- Use a center of excellence to minimize training and risk

Expand Your Information Architecture

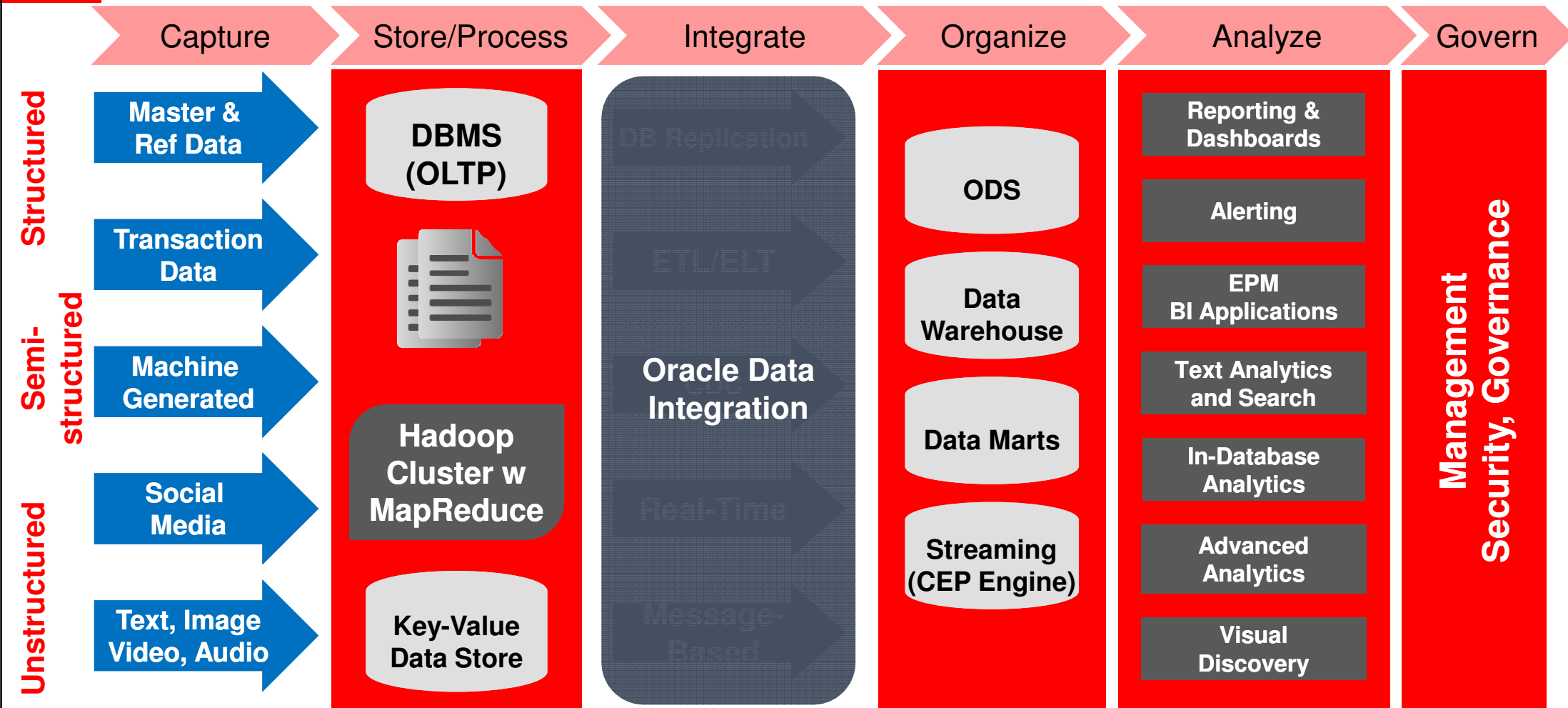
- Embrace data diversity and long tail data analysis
- Correlate big data and structured data
- Provide high performance and scalable analytical sandboxes

Oracle Data Integration

The slide features a solid red background. On the right side, there is a diagonal cutaway view of a server rack, showing various components like fans, ports, and circuitry. The Oracle logo is positioned in the bottom right corner.

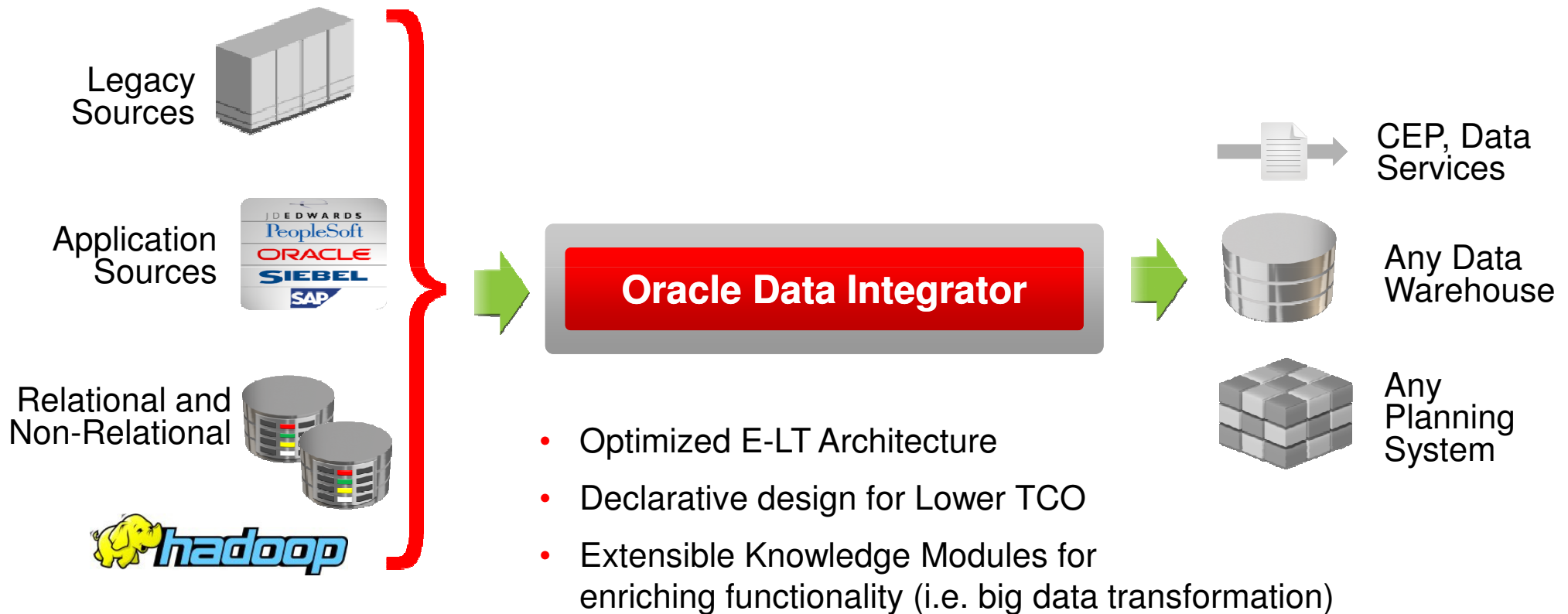
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Driving to an Integrated Architecture



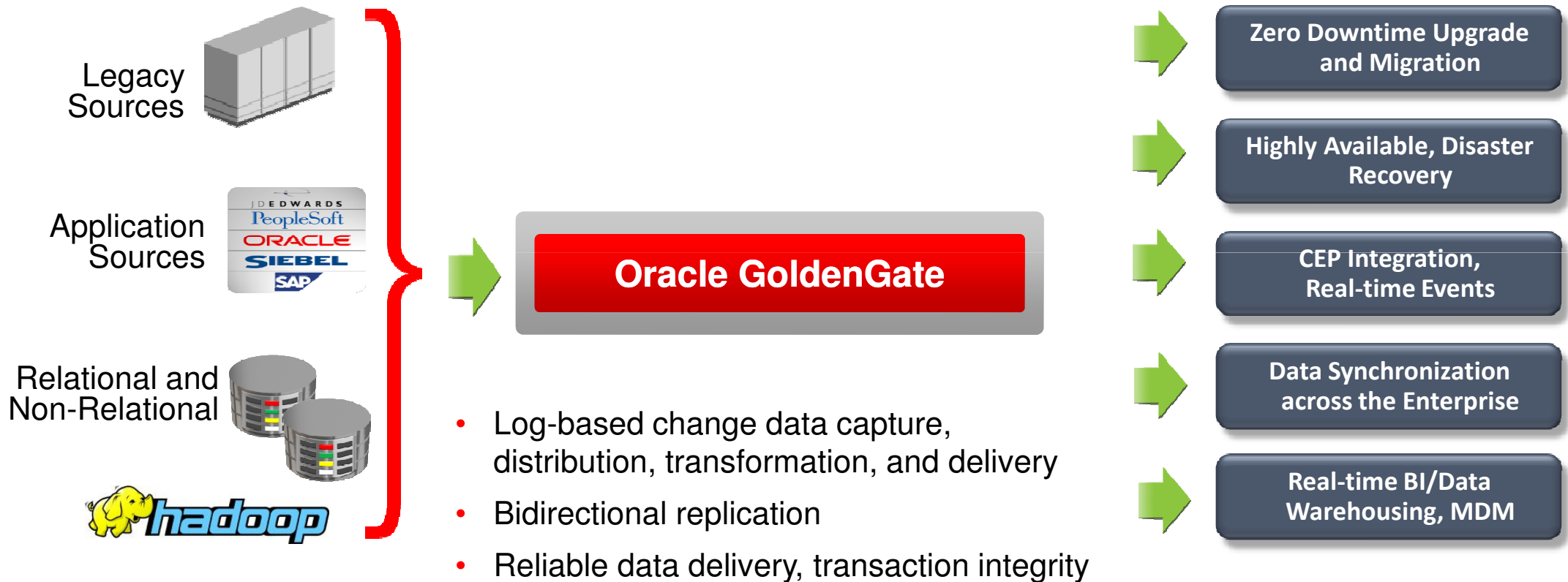
Oracle Data Integrator

Bulk Data Processing and Big Data Transformation



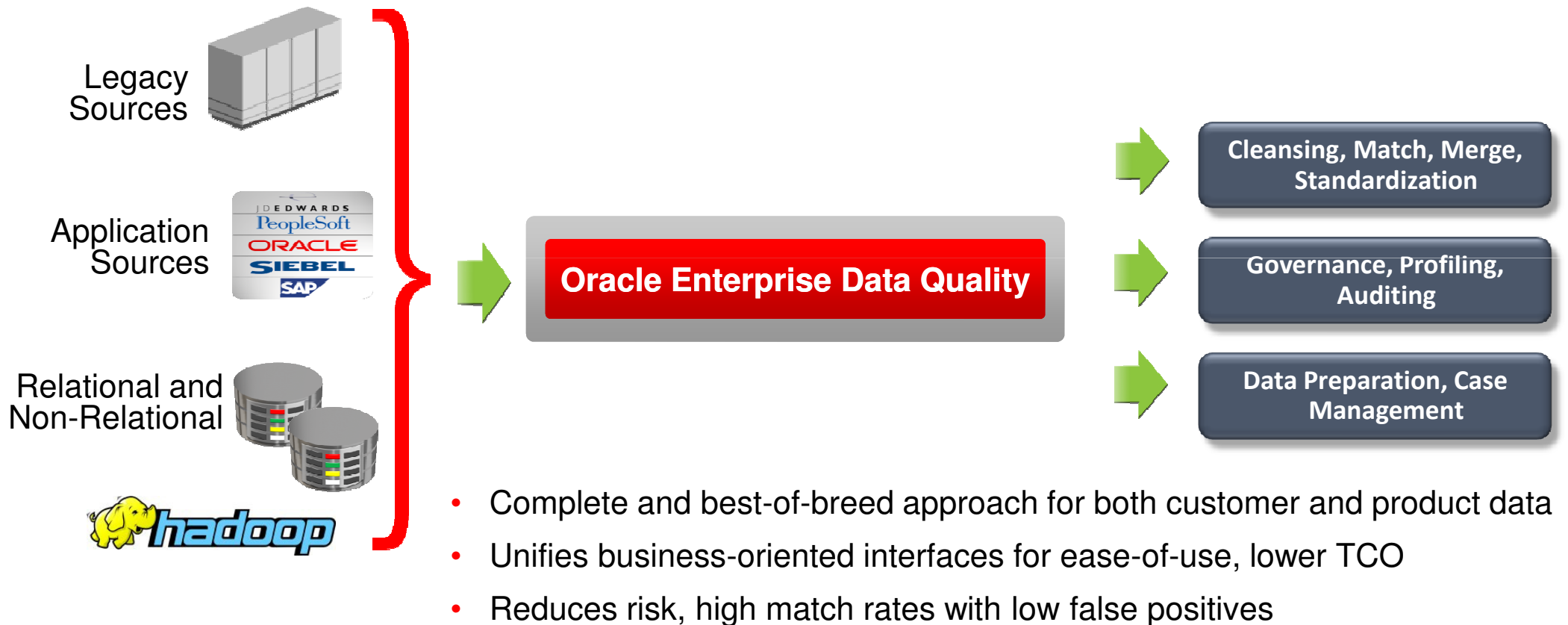
Oracle GoldenGate

Real-time Data Integration for Big Data



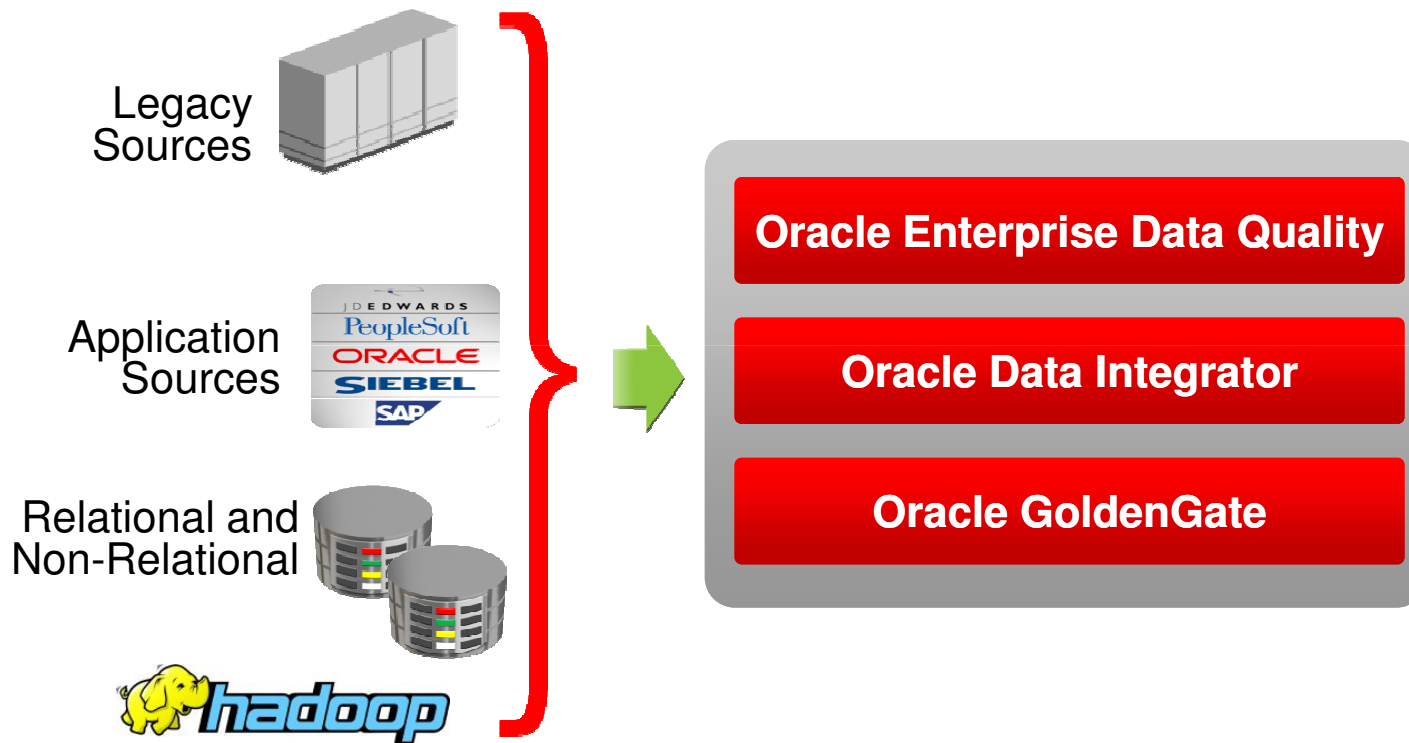
Oracle Enterprise Data Quality

Data Quality for Big Data



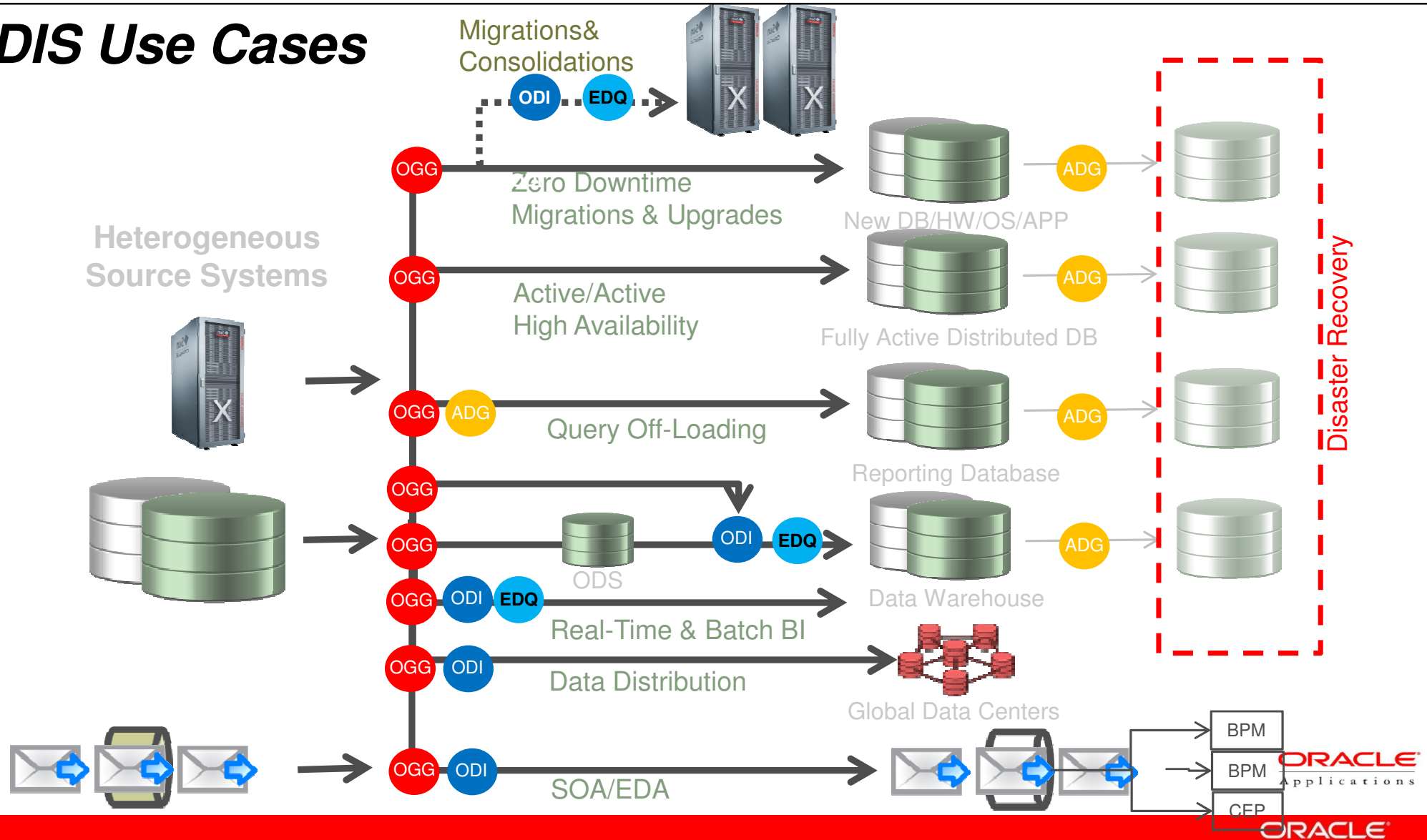
Oracle Data Integration

Complete Offering for Enterprise Data Integration



- Complete and best-of-breed approach to address **enterprise integration**
- **Maximum performance** with lower cost of ownership, ease of use, and reliability.
- Certified for leading technologies to deliver **fast time to value**
- Oracle customers report:
 - 80% lower TCO
 - Five times higher performance
 - 70% reduction in development costs

DIS Use Cases



Data Integration in the Marketplace

Sorted by Vertical Markets (sample customers only)

Communications



Finance / Banking



Media



Services



Energy/Industrial



Insurance / Health



Retail



Other



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Join the Oracle Community



Twitter

@ORCLGoldenGate or #OracleDataIntegration



Facebook

facebook.com/OracleDataIntegration



LinkedIn

Oracle Data Integration



Oracle blog

blogs.oracle.com/dataintegration



Oracle.com

oracle.com/goto/dataintegration

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Hardware and Software

The Oracle logo consists of the word "ORACLE" in white, uppercase, sans-serif font, centered within a solid red rectangular bar.

ORACLE®

Engineered to Work Together

ORACLE®