



# *Master Data Mgmt & Enterprise Data Warehouse*

A case study of “Systems of Record”

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# The Environment...

- Major international company
  - Formed by merger of several companies with roots in different cultures
  - Three primary businesses: prescription drugs, over-the-counter drugs, and veterinary medicines
  - Global presence
    - \$11+ billion annual sales
    - 100+ countries
    - 80+ locations with significant IT systems
    - 35+ manufacturing sites world-wide
    - Four major R&D facilities (US and Europe)
    - 60K+ employees
  - Diverse cultures, processes and systems
  - New leadership team

# The Business Problem...

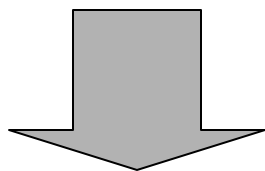
How do you provide an integrated view of operations and strategic information analysis in a business environment where....

- Management demands transparency and consistent, reliable data
- Non-integrated ERP / transaction systems exist by function or site
- Diverse analytical systems
  - Deliver inconsistent results
  - Lack critical information analysis capabilities
  - Have duplicate or overlapping functions
- Information must be consolidated from systems not under the control of the company (collaborations, external sources, more mergers & acquisitions)
- Cost reduction is a high priority
- Solutions are needed quickly



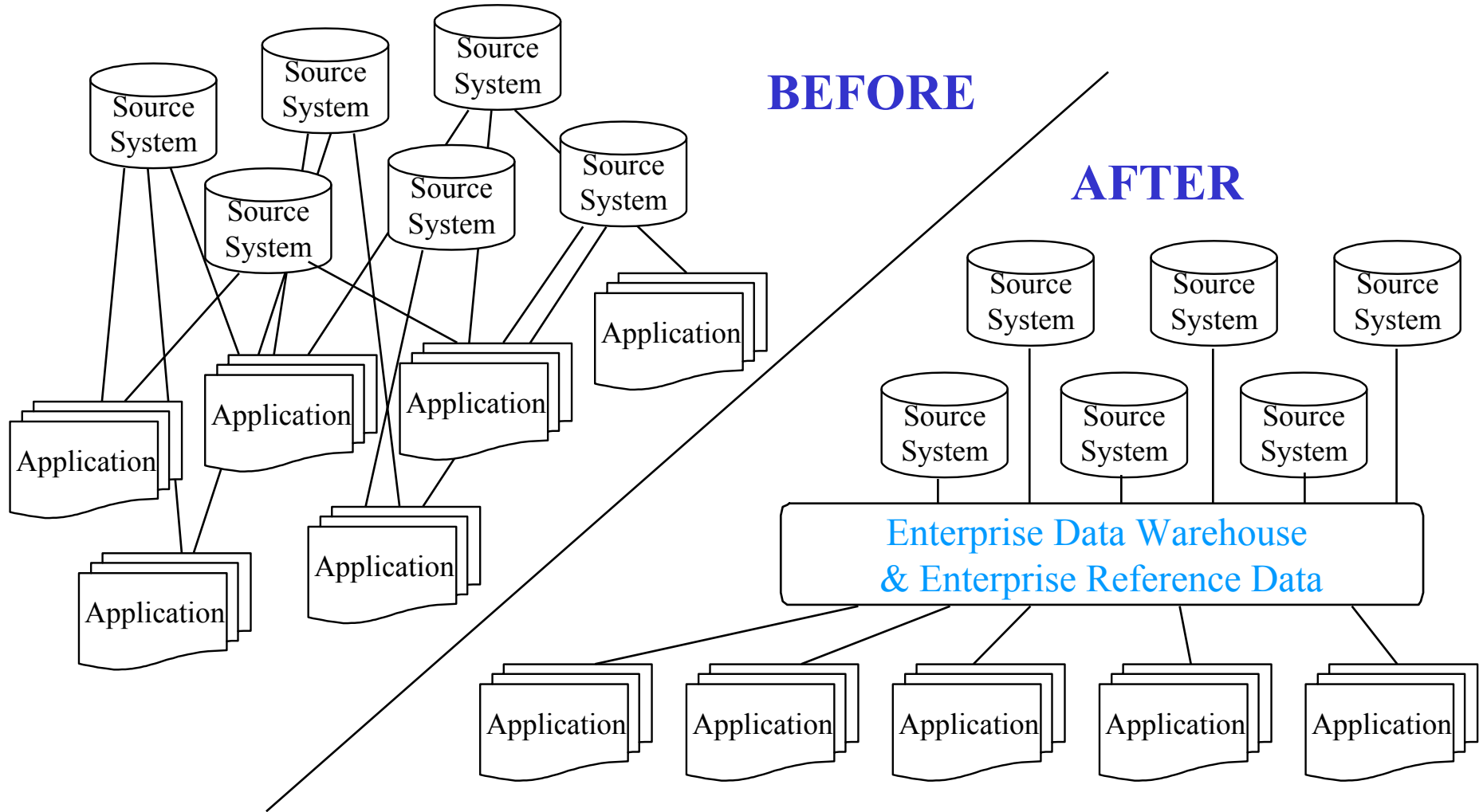
# The Approach

- Integrate data along the value chain (across R&D, procurement, manufacturing, marketing, sales, etc.)
- Collect transaction data once, use it where needed
- Develop an enterprise wide focus, but...
- Don't try to "boil the ocean"
- Focus on solving business problems rapidly

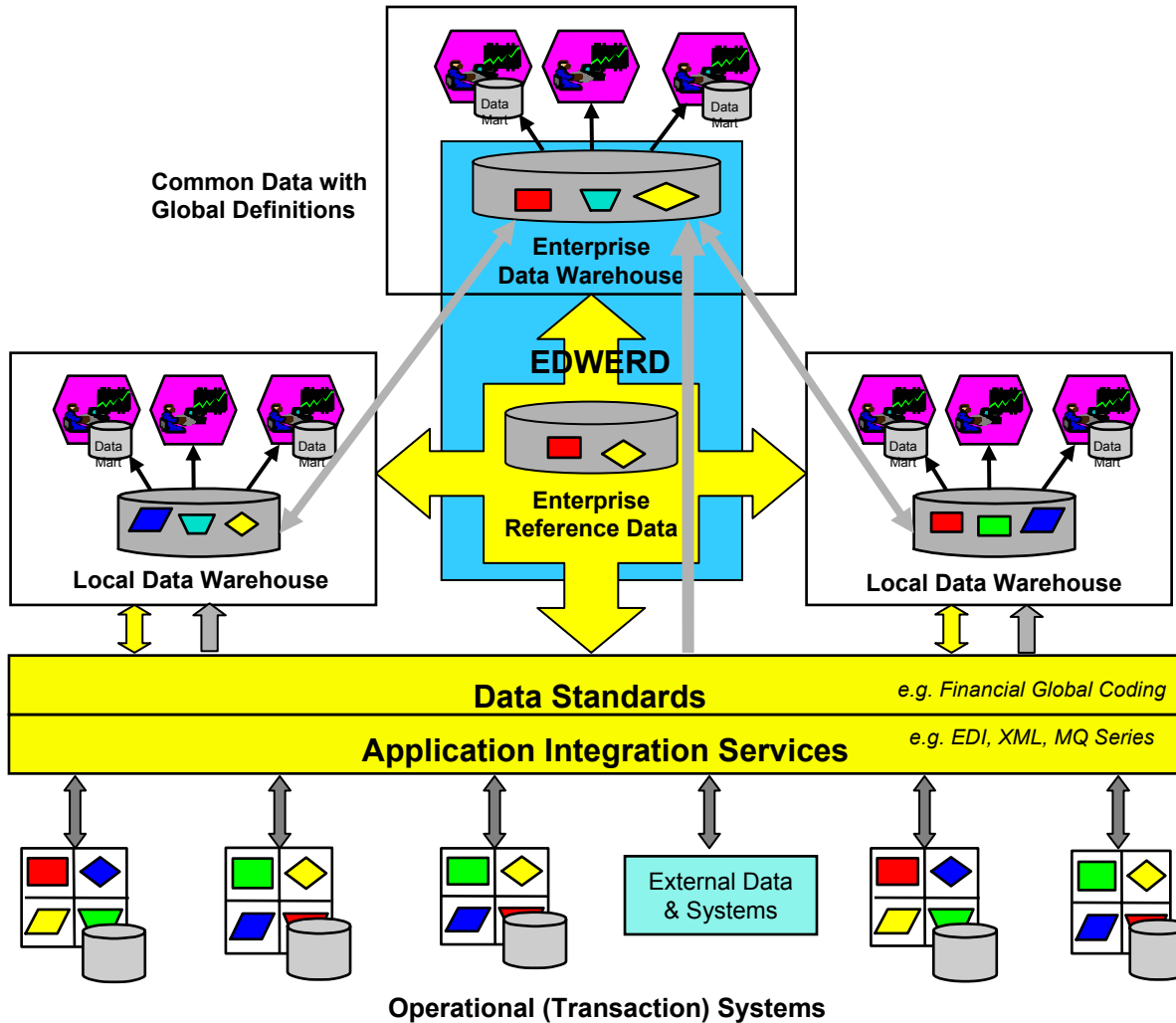


An Enterprise Data Warehouse and  
Enterprise Reference Data

# The Goal



# The Solution



Reference Data	Business Owner
Product	Finance
Article (SKU)	Mfg
Unit of Measure	Mfg
Supplier	Mfg
Customer	(tbd)
Supply Chain Unit	Mfg
Trademarks	Legal (IPO)
Foreign Exchange	Treasury
Chart of Accounts	Finance
Legal Entity	Legal
Responsibility	Finance
Function	Finance
Organization	HR
Employees & Contr.	HR
Country / Reg / Area	Finance
Sites (Property)	Real Estate
Project	(tbd)

Event / State Data	Business Owner
Product Sales	Finance
Competitor Sales	Mktg
Sales Forecasts	Mfg
COGS (Std. Costs)	Mfg
Royalties	Finance
Prices (3 <sup>rd</sup> Party Retail)	Marketing
Inventories	Finance
Expenses, Financials	Finance
Head Count	HR
Manufacturing Plans	Mfg
Purchases	Procurement
Vendor Performance	Procurement
Project Info / Status	(tbd)
Customer Service	(tbd)

# *EDW*ERD Objectives

- **Standardize *key descriptors* across the company (ERD)**
  - Establish GLOBAL taxonomies as a common language for classifying, describing, analyzing & reporting *key* business information
  - Maintain a central repository of *key* reference data (codes, descriptions and current state data)
- **Provide a global view of *key operations* (EDW)**
  - Provide a single integrated source of *critical* event/state data (current and historical)
  - Collect data from multiple disparate sources
  - Transform, summarize, and deliver data to drive better business decisions

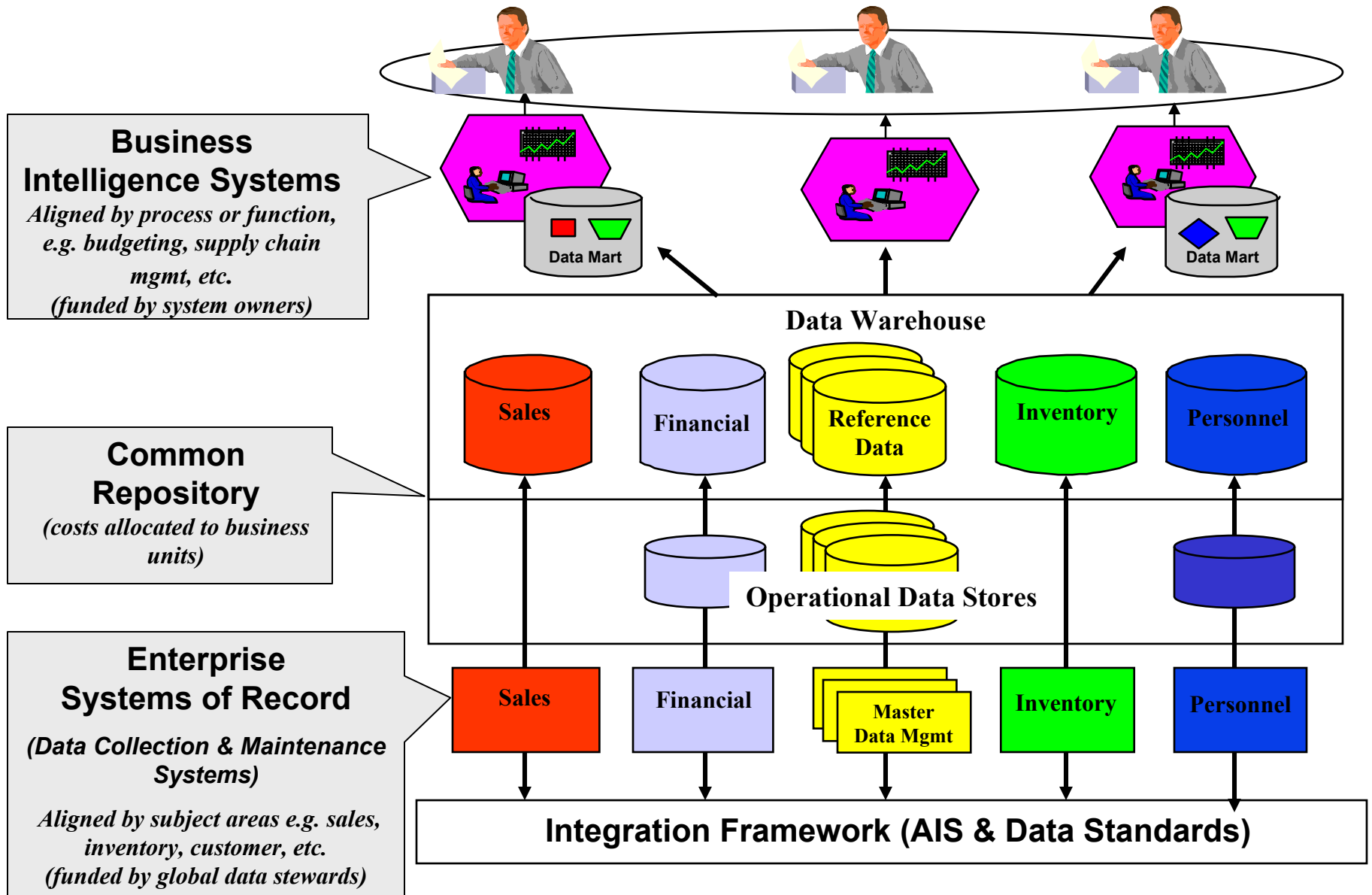
# *EDW*ERD Objectives

- **Create the discipline, processes and organization to ensure efficient delivery of quality data.**
  - Provide clear direction to source system owners on data collection processes:
    - What data needs to be collected,
    - The frequency and timing of data reporting,
    - Data definitions, structures and format of reported data.
    - Standards for quality of reported data.
    - Responsibility for correcting data errors.
  - Assign global accountability to specific individuals for data stewardship and ownership of *cross-application* data:
    - Data definitions and data policies
    - Data collection and maintenance processes
    - Data quality
    - Data security and confidentiality
    - Data audits

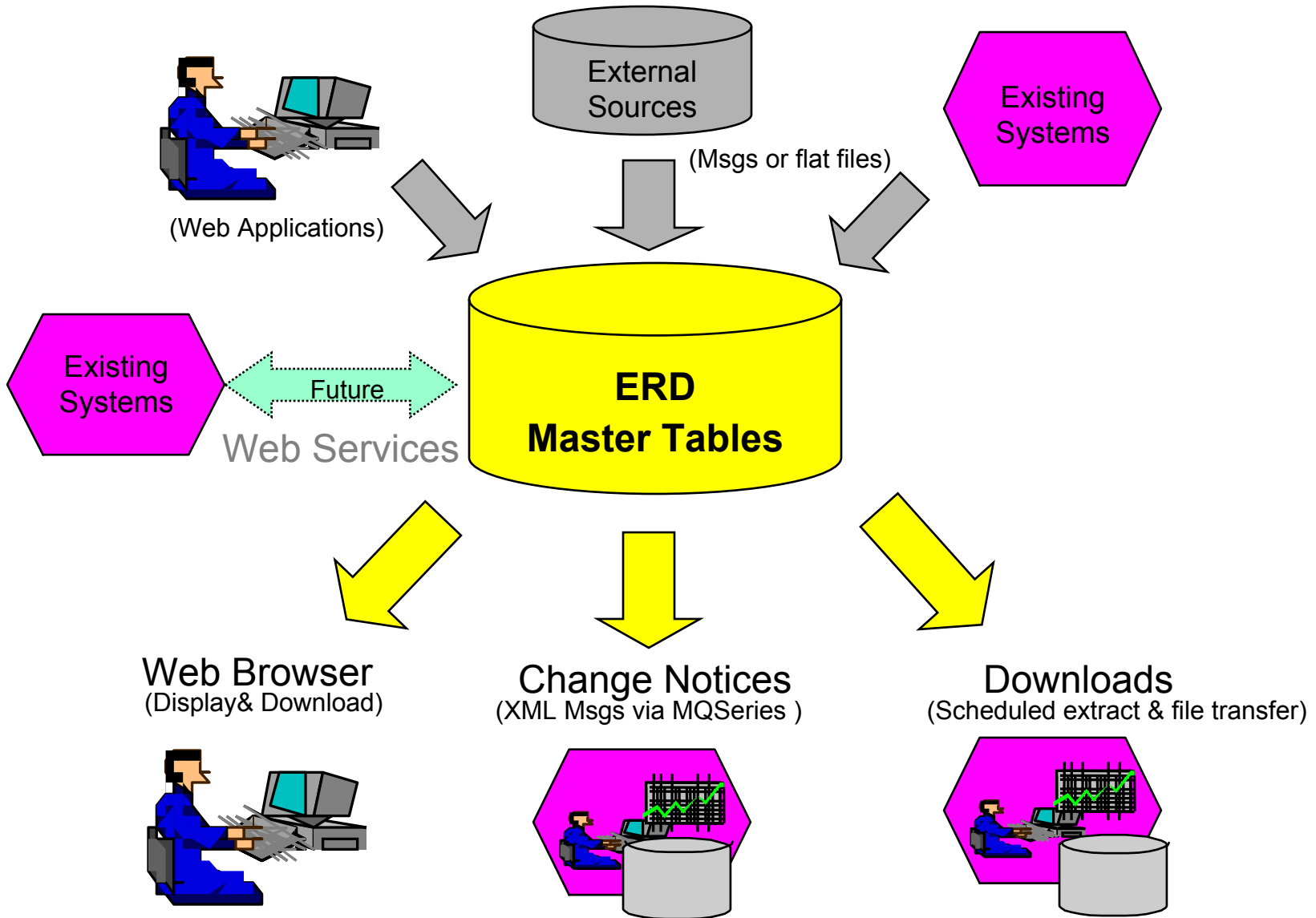
# *EDWERD* Scope

- **Global data management and decision support systems for:**
  - Core business units
  - Corporate functions
  - Corporate, global and regional mgmt and staff
- ***NOT INCLUDED:*** *strictly local data analysis and decision support needs of site operations, e.g. market companies, manufacturing plants, research labs.*  
(Exceptions by decision of the global functional management)

# EDW/ERD Systems Architecture



# ERD Data Flow



# ERD Information - Example

Unit of Measure Master

Identifier	Description	Symbol	Type
GRM	gram	g	mass
KGM	kilogram	kg	mass

Master identifier and descriptive information

Synonyms (X-ref)

System Name	System Identifier	Master Identifier
ANSI	GR	GRM
FDA	GM	GRM
USP	G	GRM

Cross-references to other versions in general use

Conversion Factors

From	To	Conversion
GRM	KGM	x 0.001
KGM	GRM	x 1000.0

Other useful information

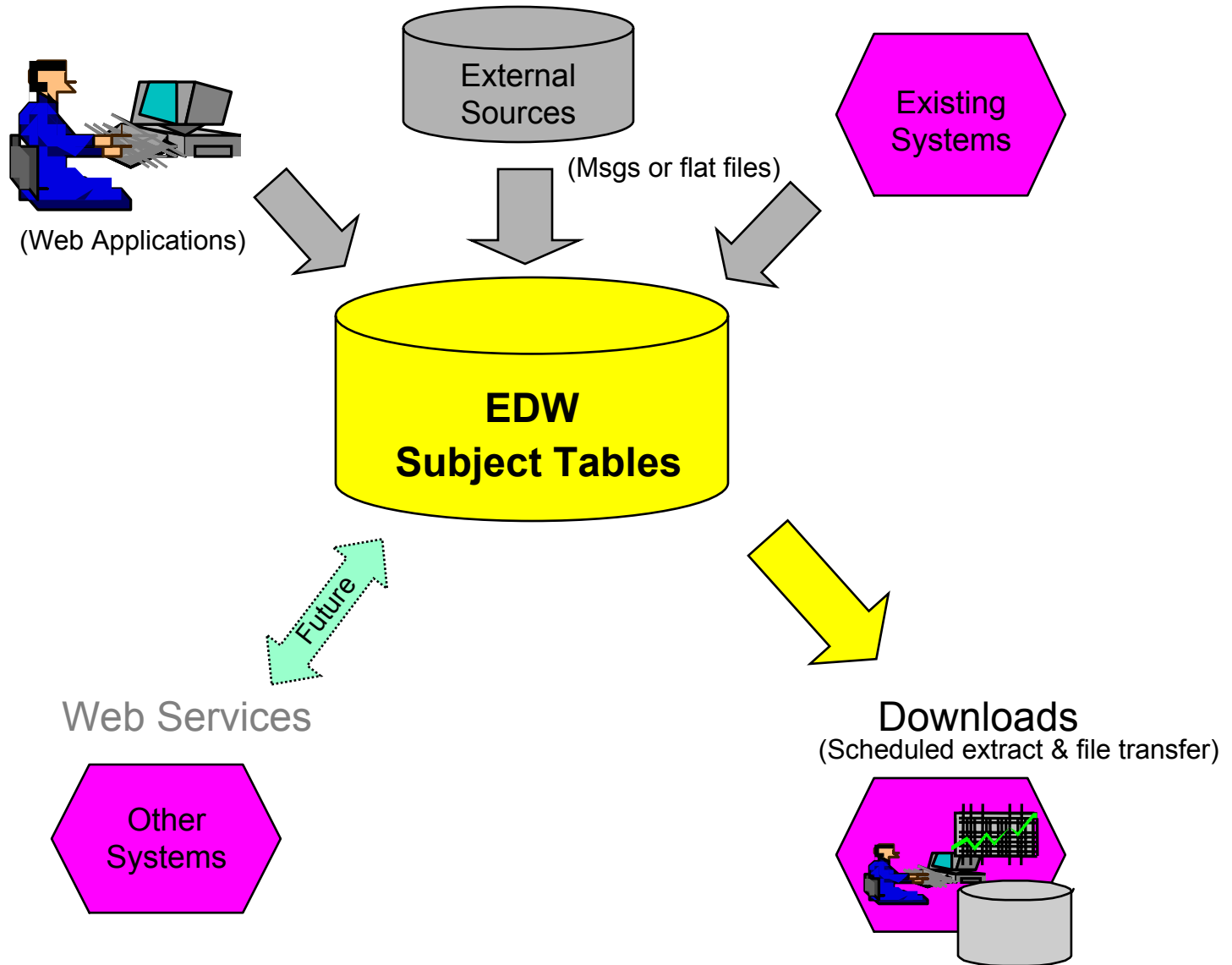
# ERD Example

- *Global Article Number System*
  - Official source of product information world-wide (sku level)
  - Enabled fully integrating data from merged company into product sales, inventory and financial reports in 5 weeks using only 1 person and no special work-arounds.
  - Improved communication about products, product characteristics, reporting roll-ups, etc.
  - Systems didn't change their sku numbers.

# ERD Example

- *People Directory*
  - Global directory of employees and contract workers
  - Updated daily from HR and other systems
  - Source for directory systems world-wide
  - Better security thru improved identity management
  - Significantly enhanced communication and collaboration
  - Systems didn't change their identifiers

# EDW Data Flow



# EDW Example

- *Article Sales and Inventory System*
  - Official source for sales, inventory, COGS information
    - All data stored at SKU level
    - Data collected from 80+ systems world-wide
  - Robust analysis of reported sales, COGS and inventory
  - Significantly reduced time for monthly consolidation and reporting

# EDW Example

- *Headcount System*

- Official source for global headcount information
- Data available according to financial and non-financial reporting structures
- Single source, but engineered to accept data from multiple sources

# EDW Example

- *Procurement Data Warehouse*
  - Provided spending analysis by supplier, site, material, business area, etc.
  - Encompassed approximately 80% of all spending by combining data from multiple accounts payable systems worldwide
  - Enabled the Procurement organization to achieve significant cost savings.

# Meta Data

- Simple web site
- Business descriptions of each subject area
  - Description (text only)
  - Data Steward names & contact info
- Descriptions of data access & distribution methods available for each subject area
- Links to browsing facilities for the data
- High level description of EDW/ERD process
- *Data models planned for future*

# Data Stewardship

- ***Data Stewardship***

- Roles people play in information quality
- ***Critical to sustainable quality of information***
- Willingness to manage data *for the well-being of the larger organization*

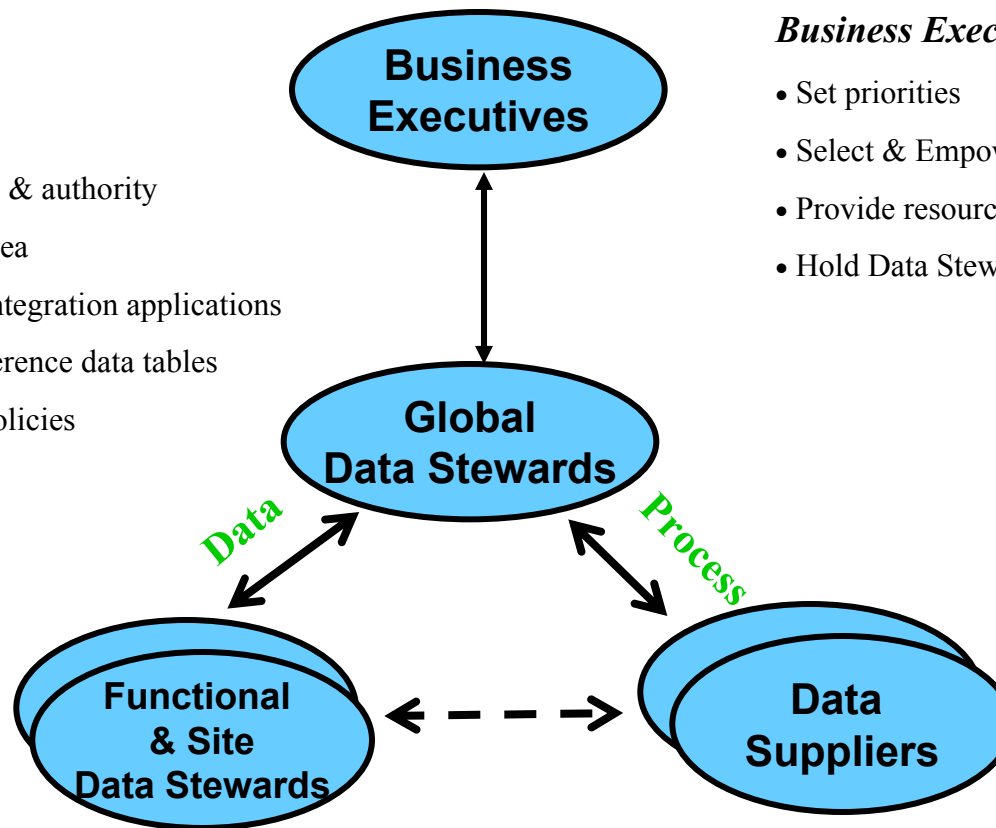
- ***Data Stewards***

- Oversee processes that create information for their assigned subject area
- Have ultimate accountability for the quality of information produced to meet downstream information users' needs
- Establish business definitions, domain values (taxonomies) and business rules
- *Assure data definitions meet the needs not just of their own business area, but also for all other personnel who require that data to perform their business processes.*
- Often use stewardship teams to ensure business-wide representation
- Are persons from the business areas, not IT

# Business Ownership

## *Global Data Stewards*

- Enterprise level perspective & authority
- Responsible for a subject area
- Own data maintenance & integration applications
- Own data warehouse & reference data tables
- Develop data/operational policies
- Grant data access



## *Business Executives*

- Set priorities
- Select & Empower Data Stewards
- Provide resources (budget, staff, etc.)
- Hold Data Stewards accountable

## *Functional & Site Data Stewards*

- Business Unit / functional / site perspective & authority
- Define data rules & policies (with Global Data Stewards)
- Subject matter experts on process & data subject

## *Data Suppliers*

- Update data warehouse with transaction and reference data
- Approve and monitor data warehouse content
- Knowledge of data rules, format & content

# EDW/ERD Process

Iterative - Focus on Business Results – *Fast*

## Action

## Responsibility

**Identify Subject Areas that  
*Drive Business Results* for  
Enterprise and Set  
Implementation Targets**

**EDW/ERD Steering Committee**  
(Corporate & Functional Business Leaders)  
supported by EDW/ERD Process Owner

**Appoint Global Data Steward  
for each EDW/ERD Subject Area**

**Functional Business Unit Heads**

**Establish Process and System  
to Maintain Subject Area Data  
and *Share it Seamlessly Across*  
the Enterprise**

**Global Data Steward**  
supported by ERD Process Owner

**Implement all *new* applications  
to be EDW/ERD compliant (*may*  
*require maintaining cross-reference to*  
*ERD or sourcing data from EDW/ERD*).**

**System Owners**  
supported by IT

# Simple Planning Tools

Subject Area (Fact Tables)	Business Owner	Current (Sys Name)	In Process	Proposed	Future Opportunity
Product Sales	Finance	Appl O		Daily Sales Study	
Competitor Sales	(GBM?)			Global IMS Data	
Sales Forecasts	Global Supply		Forecasting Appl		
COGS (Std. Costs)	Global Supply				Appl I Rewrite
Royalties	Finance	Appl R			
Prices (3 <sup>rd</sup> Party Retail)	GBM	Appl G			
Inventories	Finance		Inv Mgt Appl		X
Expenses & Other Financials	Finance			CDM Rewrite	
Head Count	HR	Appl H			
Manufacturing Plans	Global Supply				Appl S v 2
Purchases	Procurement	Appl P			
Vendor Performance	Procurement		Quality Appl		
Project Info / Status	??				X
Customer Service	??				X

# Business Unit Responsibilities

(funded by the Business Units)

- Select Subjects to Implement/Enhance
- Data Stewardship
- Build and Maintain the Data Collection & Integration Processes and Systems
- Build and Maintain the Business Intelligence Systems
- Source Systems Owners
  - Extract and deliver data to collection system(s)
  - Ensure data delivery not impacted by changes in source

# EDWERD Services

(costs allocated to Business Units)

- Program Coordination
  - Own the overall architecture and standards for EDWERD
  - Own the data integration plan for EDWERD
  - Ensure data linkages between projects and applications are maintained
- Coordinate infrastructure & operational support
  - DA/DBA Support
  - DBMS and ETL Support
  - Server/OS Support
  - Application Integration Services (AIS) Support
  - Upgrades, capacity changes, tuning, operational schedules

# EDWERD Services

(costs allocated to Business Units)

- Project Services
  - Architecture, design, development consulting
  - Quality Assurance
    - Application of corporate Metadata standards
    - Strict adherence to change control policies
    - Focus on audit readiness
- Fulfill Data Requests (*paid for directly by Business Units*)
  - Gather requirements
  - Obtain Data Steward approval
  - Design, develop and maintain ETL jobs

# The Benefits

- One version of the truth
  - without the pain of a global ERP implementation
- Enterprise-wide visibility into operational data
  - Without restructuring the data in the transaction systems
- Key to managing operations involving a complex network of semi-autonomous business units, collaborations, outsourced functions, etc.
  - Rapid integration of new data & processes

# The Benefits

- Faster “time to market” and lower cost
  - Information re-use
  - standard approaches and leverages business information knowledge
- Increased quality of data
  - Promotes data compatibility and integrity across company
  - Focuses accountability for data accuracy and consistency
- Permanent cost reductions thru fewer redundant efforts
  - Data pulled once for multiple users
  - Common reference data maintained once
- Benefits Realized Early and Often
  - Lasting success achieved through an iterative approach where the enterprise puzzle is filled in as it’s needed by the business

# Key Lessons

- **The “*data problem*” is solved by people and process**
  - ✓ Insist on Business Ownership & Data Stewardship
    - It’s the key to business alignment, data quality and value creation
    - Distribute responsibility to process owners
  - ✓ Insist on data quality
    - *quality = credibility = business value*

# Key Lessons

## ✓ Create the vision...but take small steps

- Have an overall plan / architecture /standards and stick to it
  - Always keep the big picture in front of you
  - Keep it simple and consistent – variations, exceptions cause pain
  - Design for consistent performance, reliability, ease of use
- Deliver in phases – *business value every 3-6 months*
  - Solve a business problem with each phase
  - Start with the desired business end state ...
  - ... and work backwards toward the source data
- Be flexible on priorities and sequencing
  - Focus on eliminating “points of pain”

# Key Lessons

- ✓ **Hold source systems accountable for data extracts**
  - Too many source systems to learn, keep up with changes
  - Don't use ETL to extract from source systems – local support staff can do it faster, better with the tools they know.
  
- ✓ **Make Metadata a priority (business & technical)**
  - Keep it simple
  - It's the key to long-term supportability, manageability
  
- ✓ **Communicate... Communicate...Communicate**

# Questions / Comments

?