IBM SOA PoT

C3050
Information as a Service

Agenda of IaaS (Information as a Service)

- Overview Information as a Service – IaaS (Concepts, Use Cases)
- Fitting into SOA
- Usage Scenarios for Information Services
- SOA Information Architecture Considerations
- IBM Products
- Lab Intro

Overview
IaaS – Information as a Service

The Information Challenge

Business Challenges

Globalization

M&As

Supply Chain

Risk & Compliance

Customer Loyalty

Operational Costs…

60%+ of CEOs: Need to do a better job leveraging information

Information Must Become a Strategic Asset

Information is in Silos

Multiple Versions

Inaccurate

Incomplete

Inaccessible

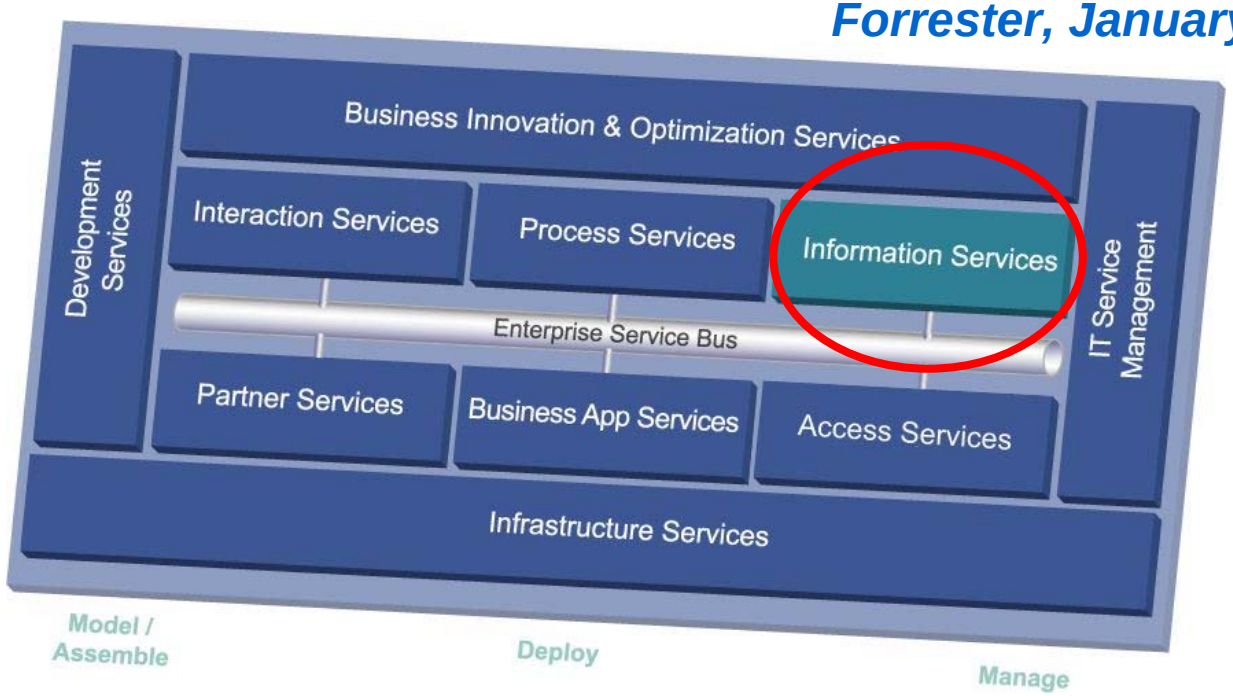
Untimely

Out of Context…

People can spend up to 70% of their time looking for information

The Need for Information as a Service

Getting the right data quickly and consistently for all applications continues to be a key challenge for many enterprises.
Forrester, January 2006



You will waste your investment in SOA unless you have enterprise information that SOA can exploit.
Gartner, March 2005

When Good Information Goes Bad

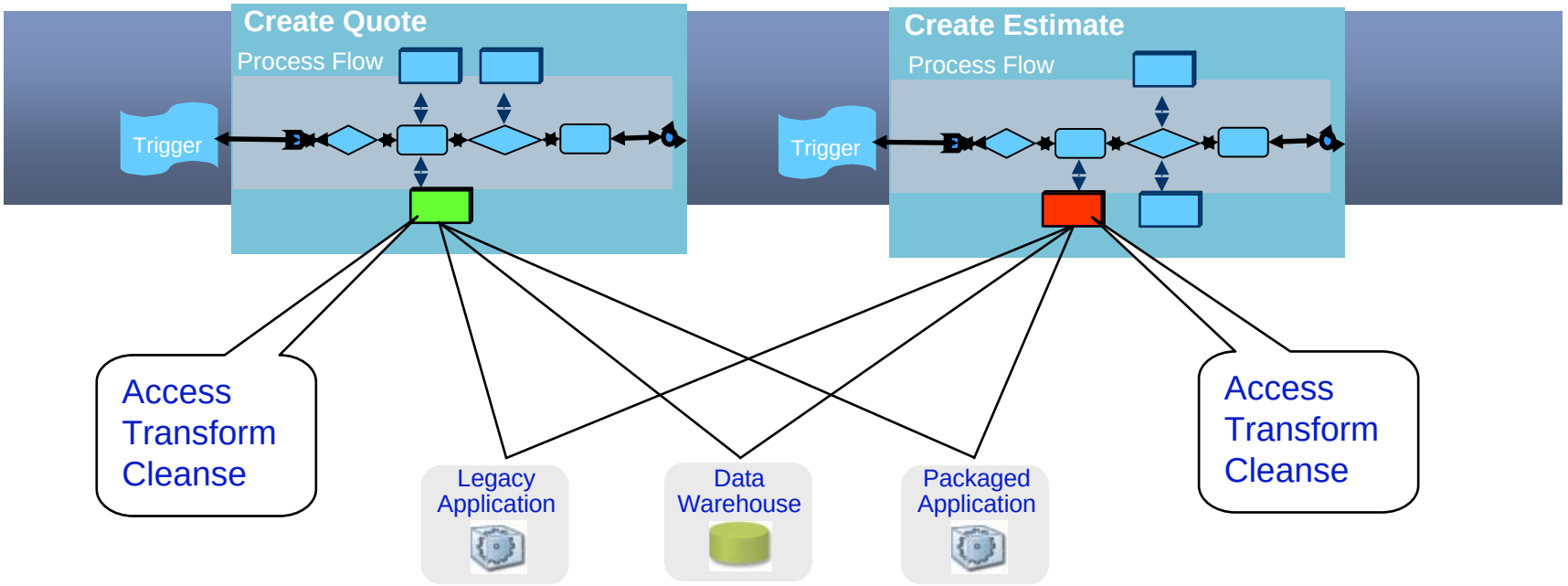
Why does this happen?

We do not have one consolidated database, and we can't, even if we might like to.

- **Data is often trapped in silos which were designed for control, not sharing.**
- **Data can live in separate databases, private and legacy files, third-party apps (e.g. SAP)**
- **We can also have unstructured data, and content in new formats**
- **Data can be provided to us by business partners, and they may manage it differently**
- **Data is hard to keep current in one database, but distributed data is very difficult to keep consistent across all sources**
- **Customer names, addresses, dates, etc, vary across sources, making it hard to match content.**

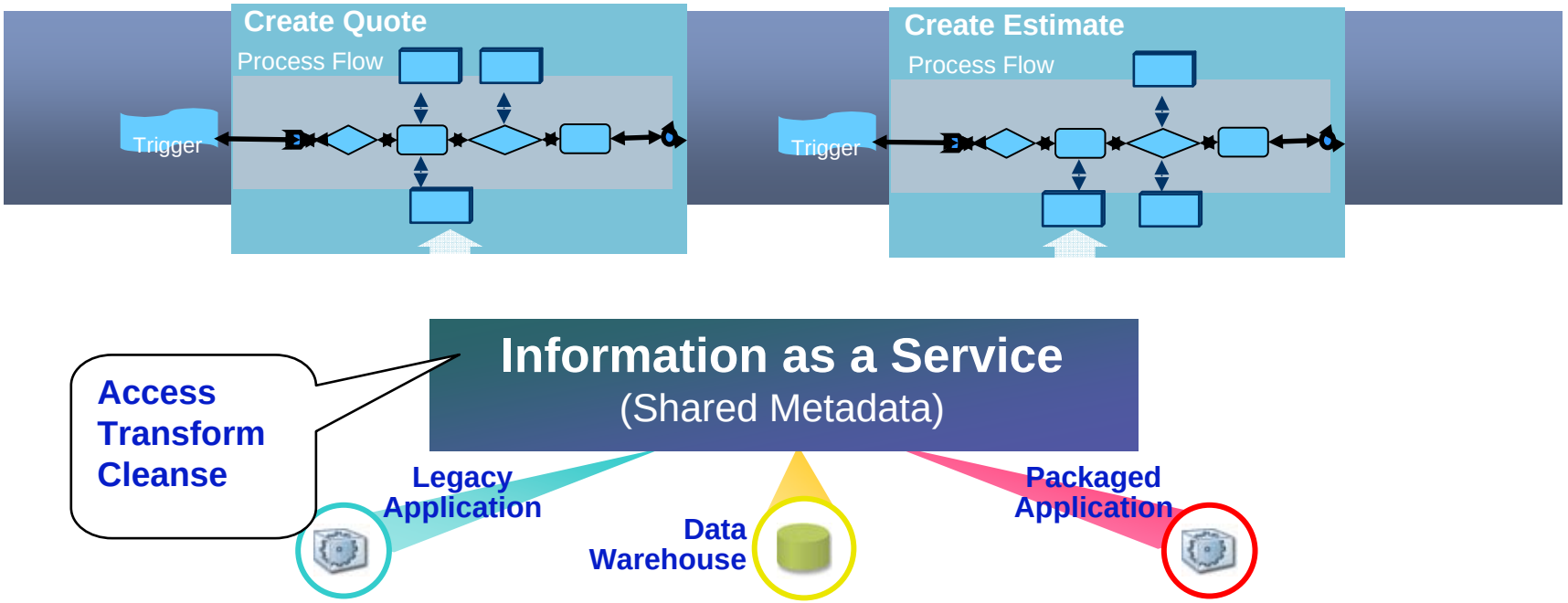
Data trapped in silos is a major part of the problem.

Why tight coupling of data causes inconsistent results



- Inconsistent “view” of the data
- Inconsistency in sources and how data is derived
- Inconsistent rules applied to data
- Multiple points of maintenance
- No flexibility to change information sources and formats

The Solution: Information as a Service

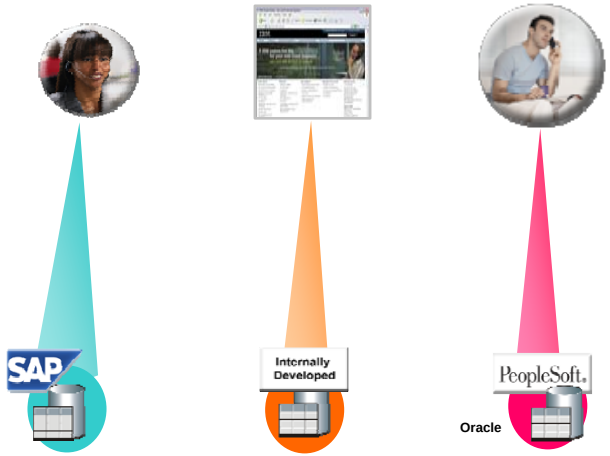


- Consistent packaging of data
- Leverages understanding of metadata relationships
- Applies consistent rules to data
- Centralized control and maintenance
- Flexibility to add and change information sources and formats

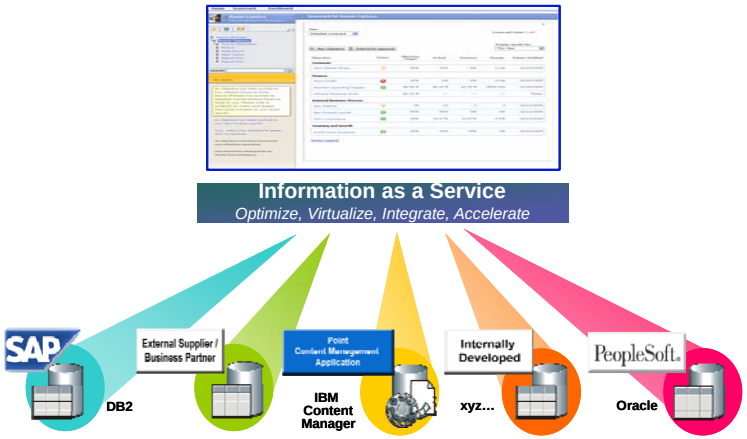
SOA makes it easier to access and use consistent information

Delivers trusted information as a service

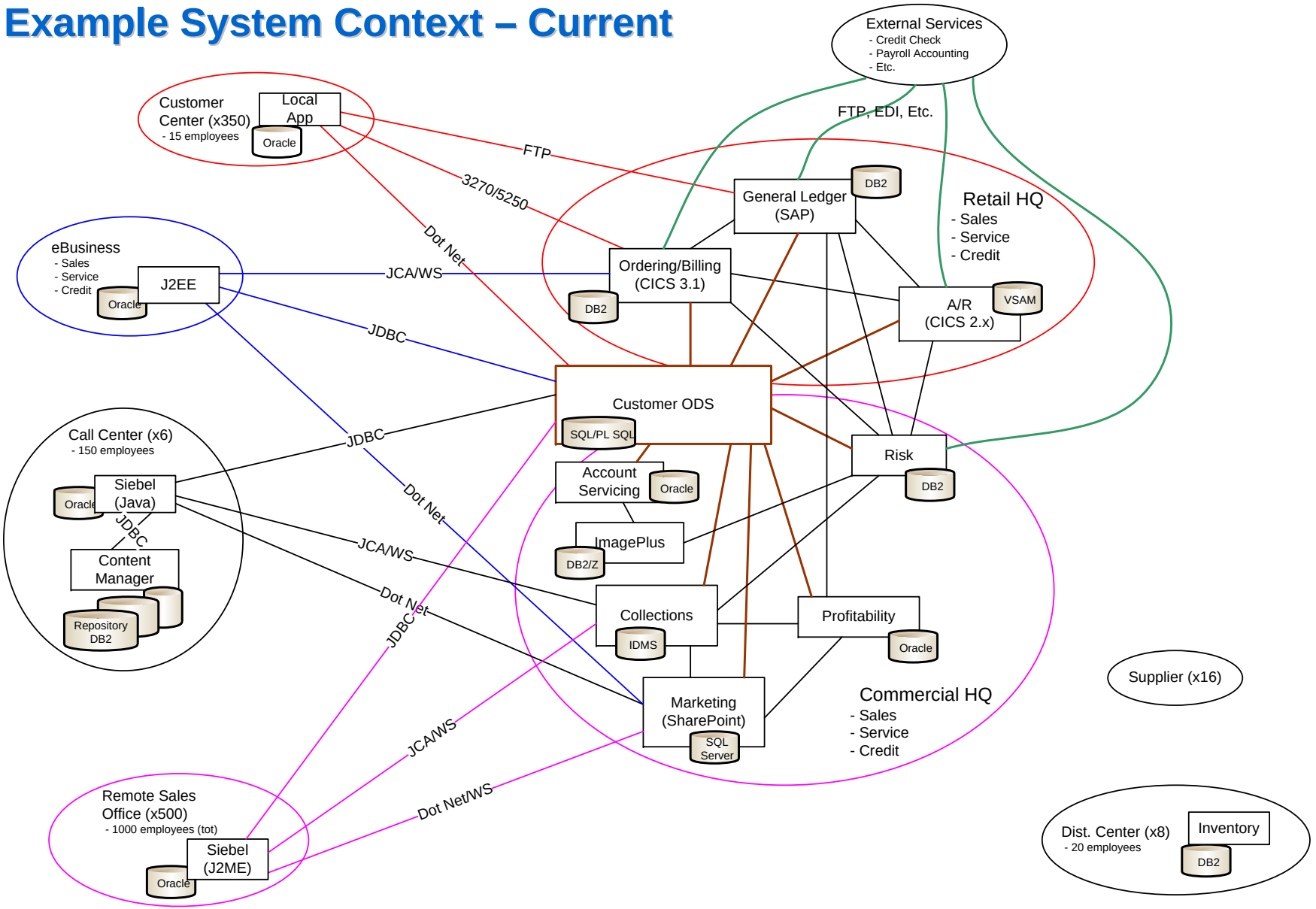
Without SOA, information remains locked in its silos



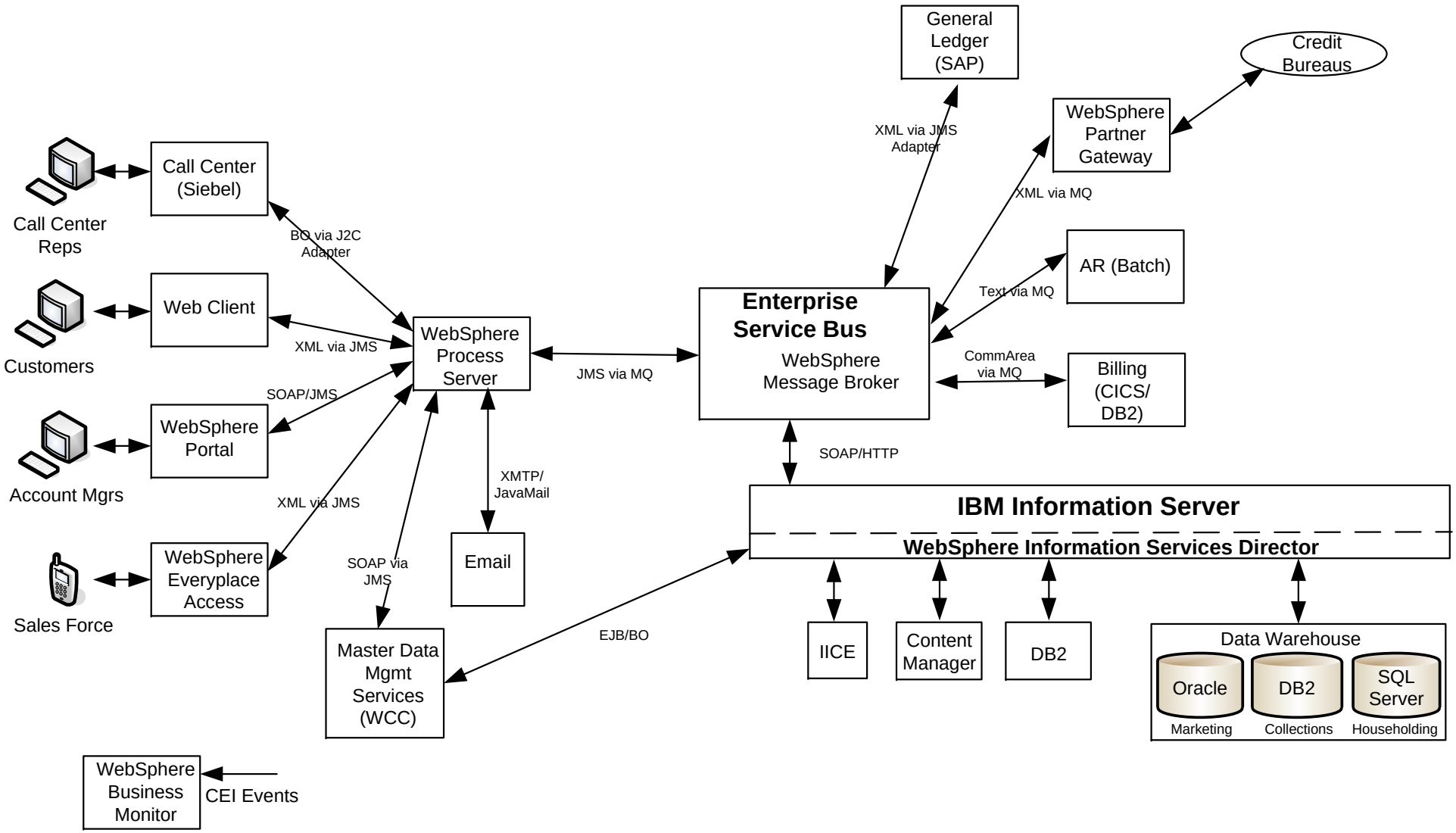
With SOA, information is consolidated from multiple sources



Example System Context – Current



Example System Context – Proposed

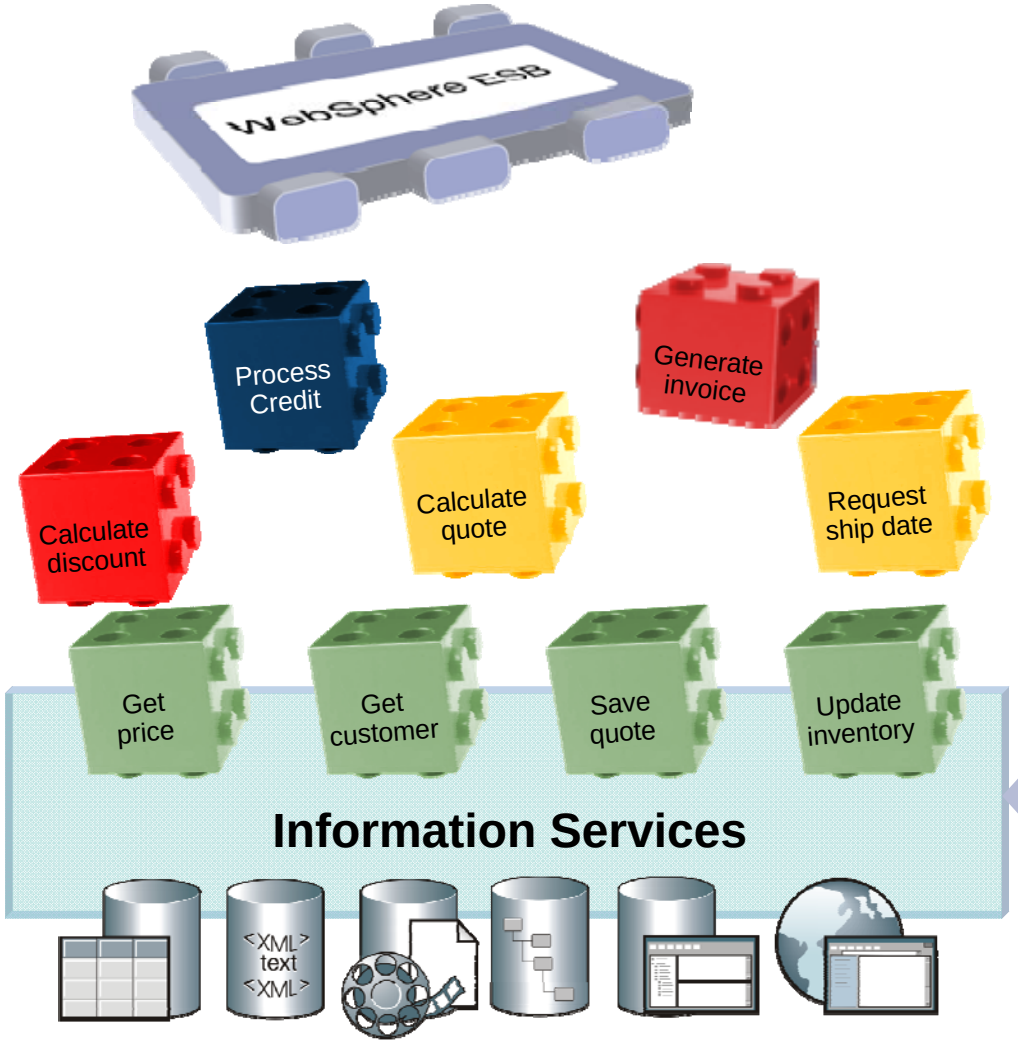


Main Topics of IaaS (Information as a Service)

- **One Database**
  - Various types of databases (IMS, Relational, XML structures)
  - Storage and representation not inline with data structure of usage
- **Multiple Databases**
  - Same information stored multiple times
  - Inconsistencies
- **Manage Master Data**
  - Core company information like customers, products manged inconsistently
  - No leading master
- **Manage Unstructured Data**
  - A lot of information – difficult to access
  - Combination of information almost impossible

IaaS – Fitting into SOA

How Does Information Fit into an SOA?



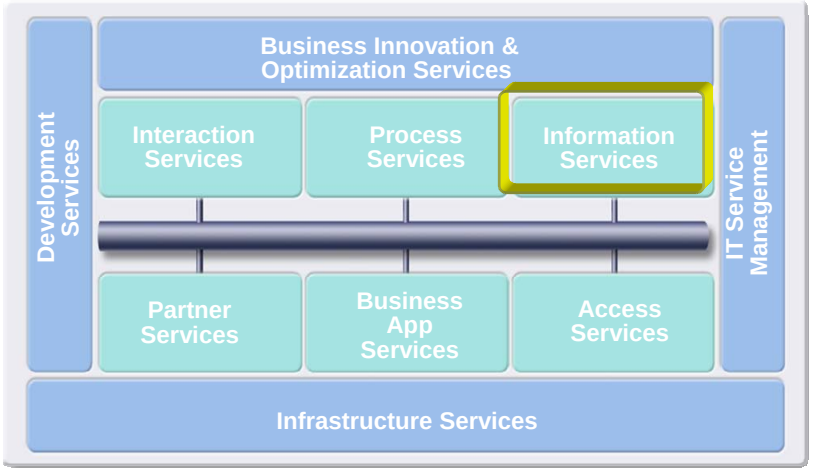
Information as a service makes information more accessible, consistent, and flexible

Publishing consistent, reusable services for information that make it easier for processes to get the information they need from across a heterogeneous landscape.

- **Select data from source 1**
- **Select data from source 2**
- **Match and link records**
- **Transform data to target**

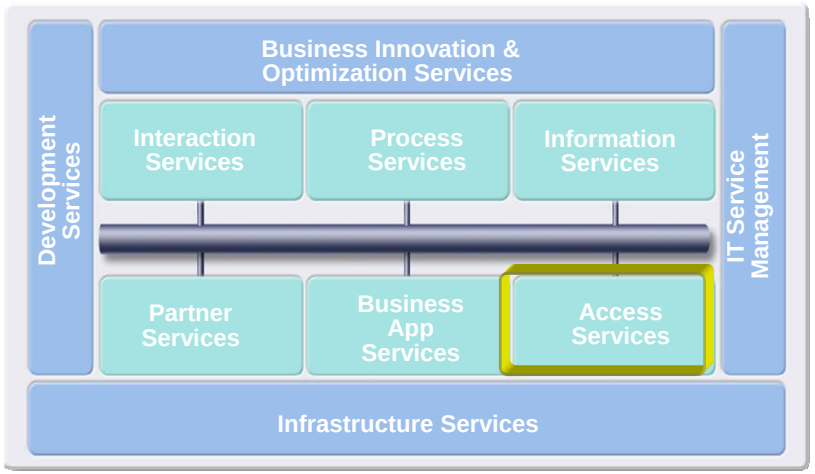
Information Services versus Others: Access Services, Business Application Services, and Process Services

- Information Services allow managing data and content in a unified manner
- Information Services provide:
  - Layer of abstraction between processes/applications and information
  - Capabilities required to retrieve, combine, and modify data from varied data sources
- Information Services allow expressing information according to the needs of business applications instead of the data source.
- Services deployed in this category are used by services in this category and others (e.g. Information Services, Business App Services, Process Services, etc.)



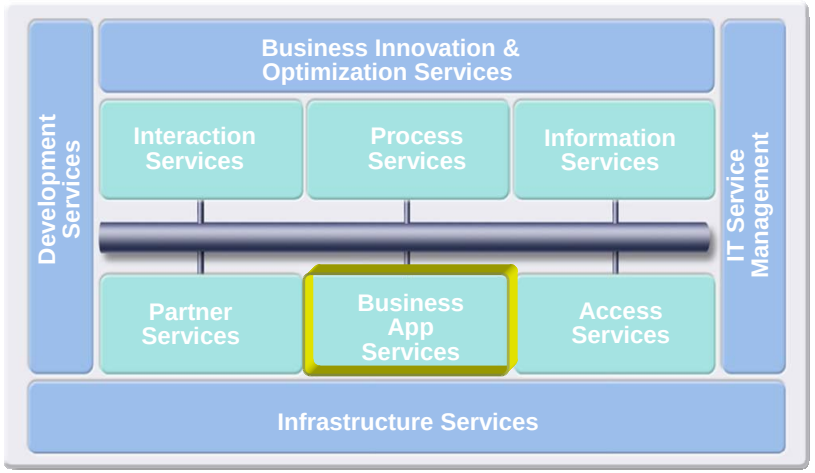
Information Services versus Others: Access Services, Business Application Services, and Process Services

- **Access Services allow interaction with legacy and prepackaged applications (e.g. ERP, CRM, etc.)**
- **Access Services provide:**
  - **Layer of abstraction between processes/portals/applications and legacy/prepackaged applications.**
  - **Capabilities required to access legacy and prepackaged applications (e.g. via adapters)**
- **Services deployed in this category are used by services in this category and others (e.g. Access Services, Process Services, Business App Services, etc.)**



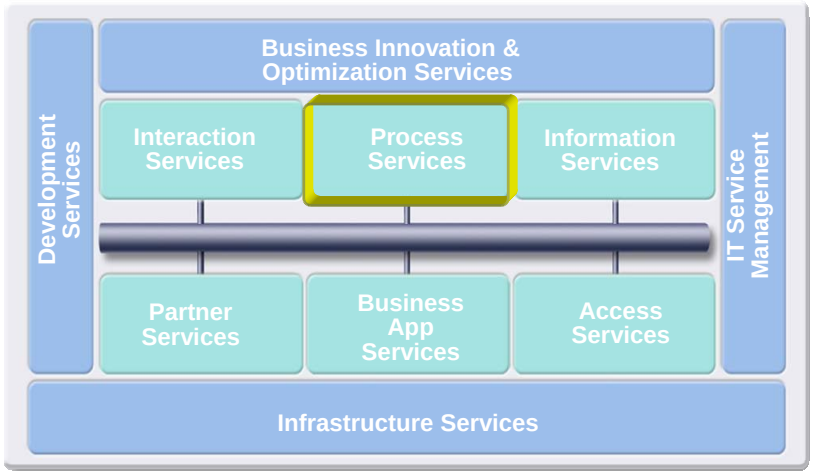
Information Services versus Others: Access Services, Business Application Services, and Process Services

- **Business Application Services provide:**
  - **Runtime services required for new or existing application components (i.e. business logic) to be included in the integrated system**
- **Services created in this category:**
  - **Implement the core business logic,**
  - **Provided by existing applications or newly implemented components.**
  - **Use services created in this category or others (e.g. Information Services, Access Services, etc.)**



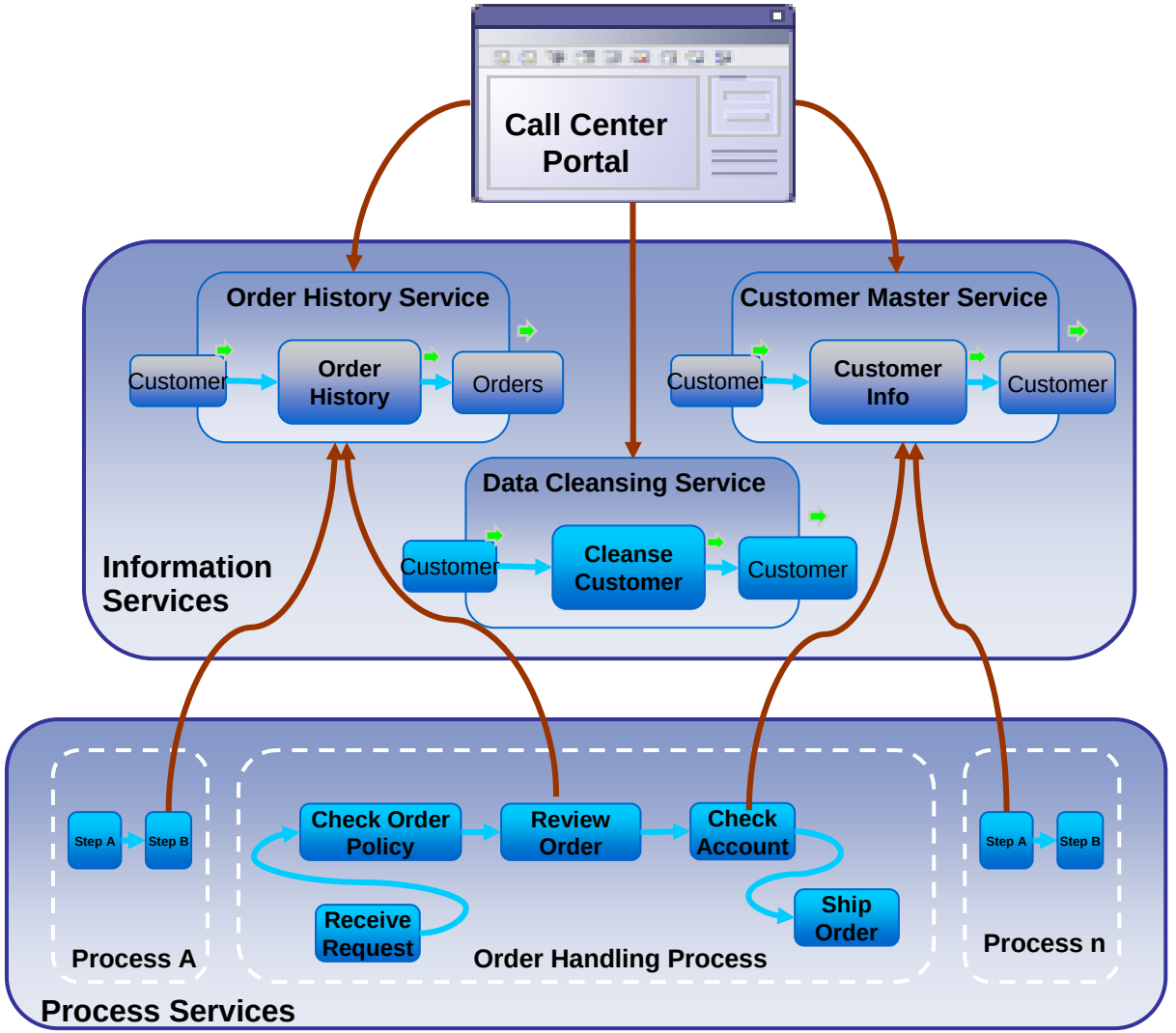
Information Services versus Others: Access Services, Business Application Services, and Process Services

- **Process Services provide**
  - **Control services required to manage the flow and interactions of multiple services to implement business processes.**
- **Services created in this category use services created in this category as well as others (e.g. services in Business App Services, Information Services, etc.)**



Information Services Feed Processes with Actionable Information

- Information Services provide:
- Layer of abstraction between Information and Applications/Processes.
- Actionable and consistent information.
- Reusable assets.



Information as a Service Entry Points

1

Service-enable Mainframe data

To make it easier to access

2

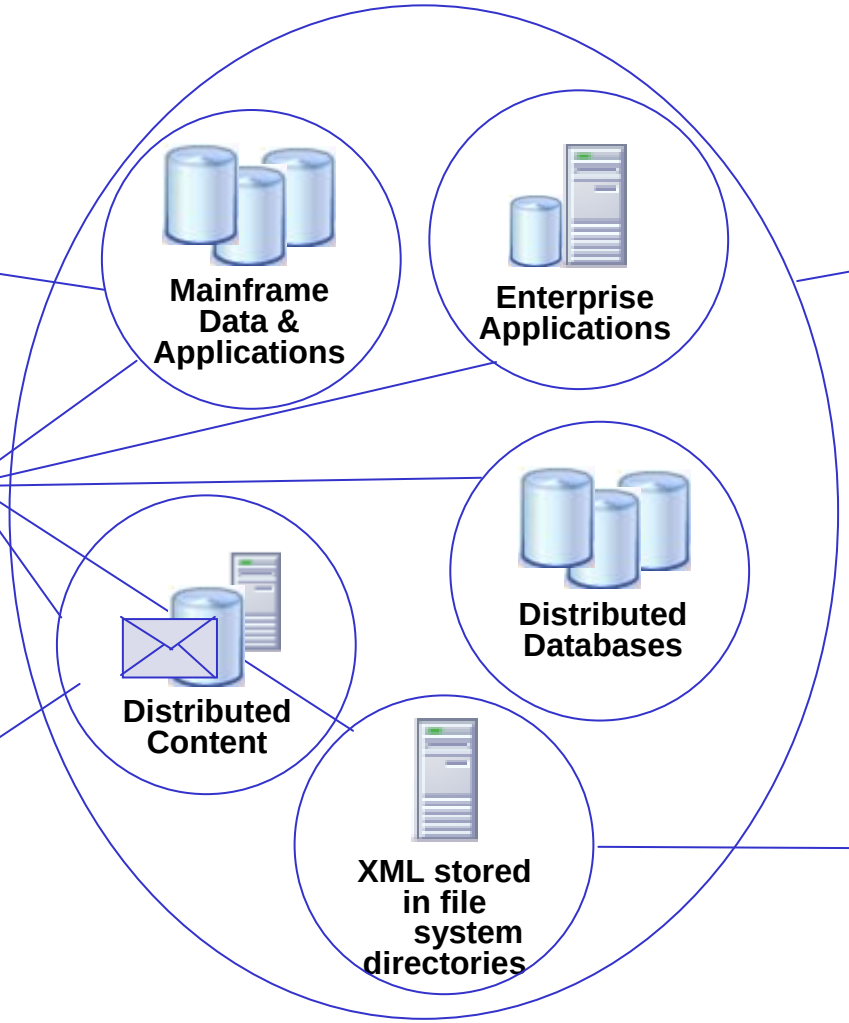
Create information Integration services

To provide consistent, complete, and accurate information anywhere

3

Create content services

To provide a unified view of content and make it easier to reuse



4

Create master data services

To provide unified management of master data across systems

5

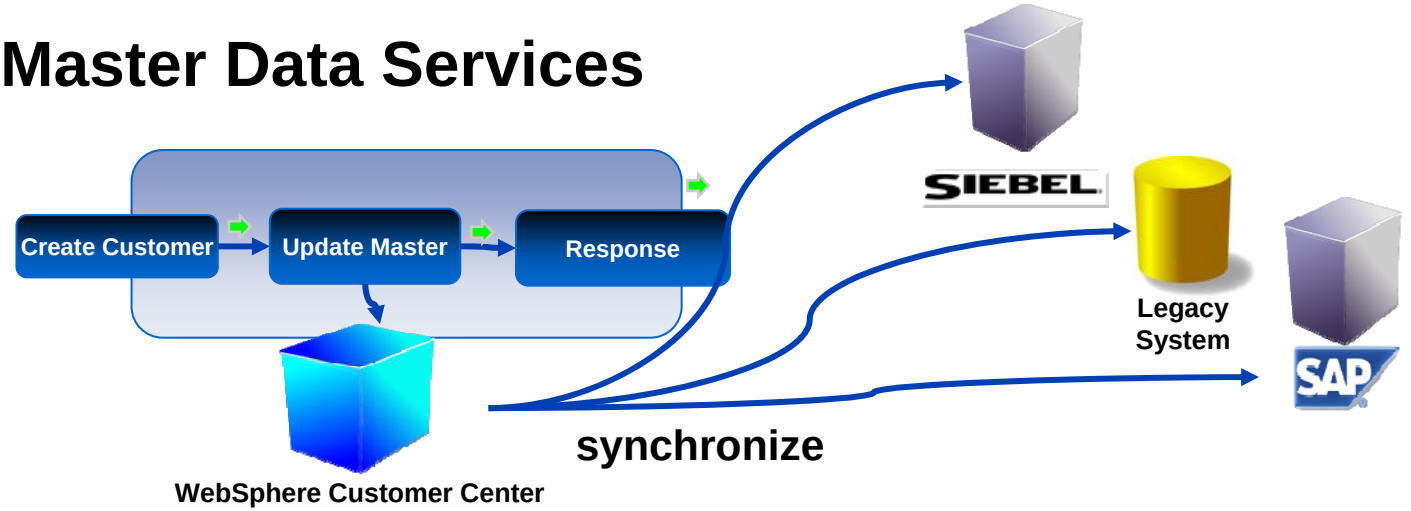
Manage XML data centrally

To enable better control over it

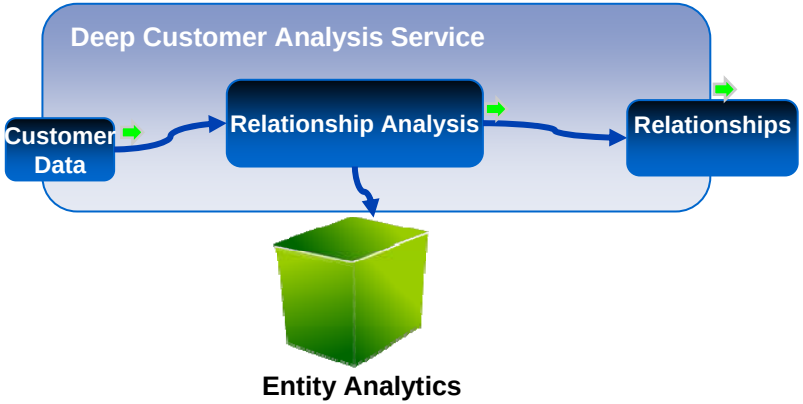
Usage Scenarios for Information Services

Types of Information Services - Business Information Services

- **Master Data Services**



- **Data Analysis Services**



Obvious Relationship:
"Kate has just applied for a systems job at your bank"

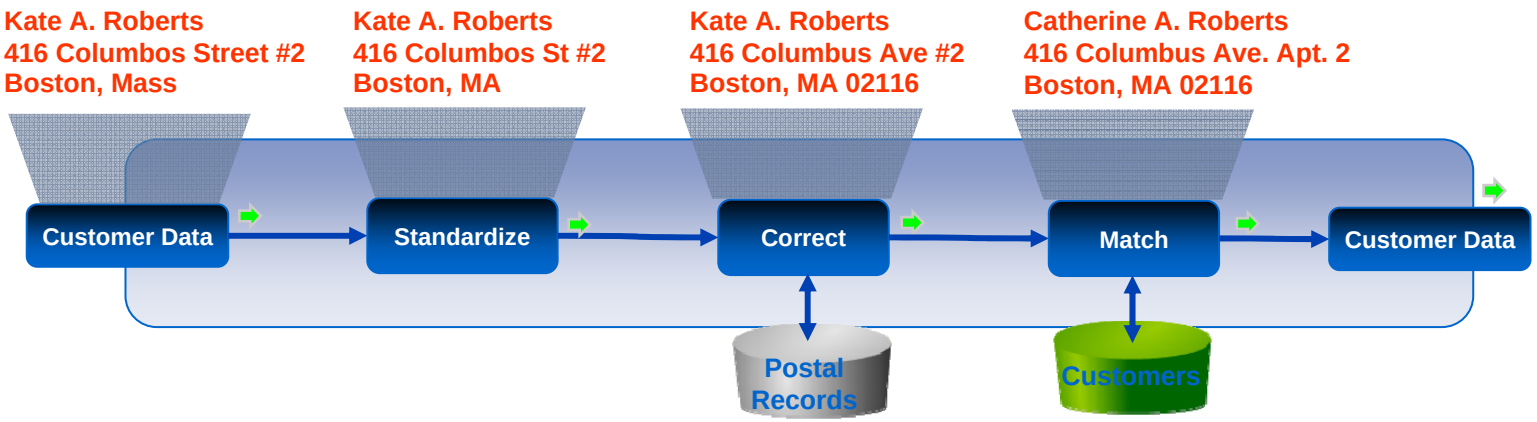
Non-Obvious Relationship:
"Kate has Tom listed as her emergency contact on her job application"

Non-Obvious Relationship:
"Tom used his former account at your bank to transfer funds to Mr. Kim"

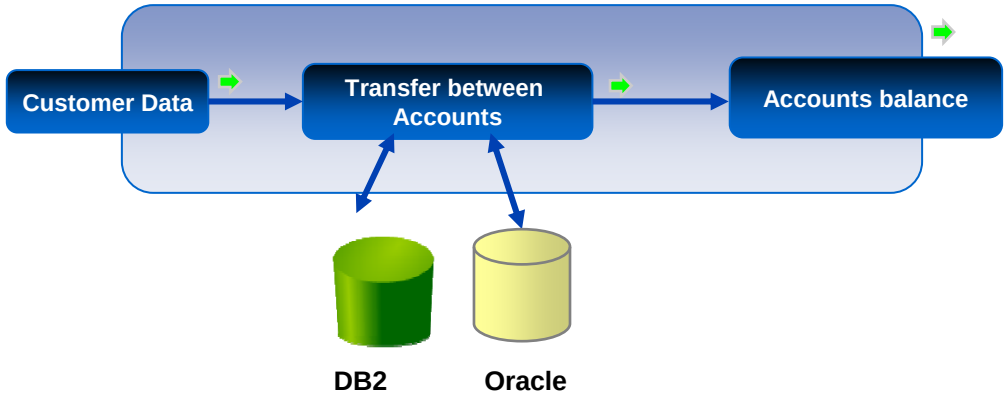
Non-Obvious Relationship:
"Mr. Kim and Mr. Wallis co-own an import/export company in Indonesia"

Types of Information Services - Information Integration Services

- **Data Quality Services**

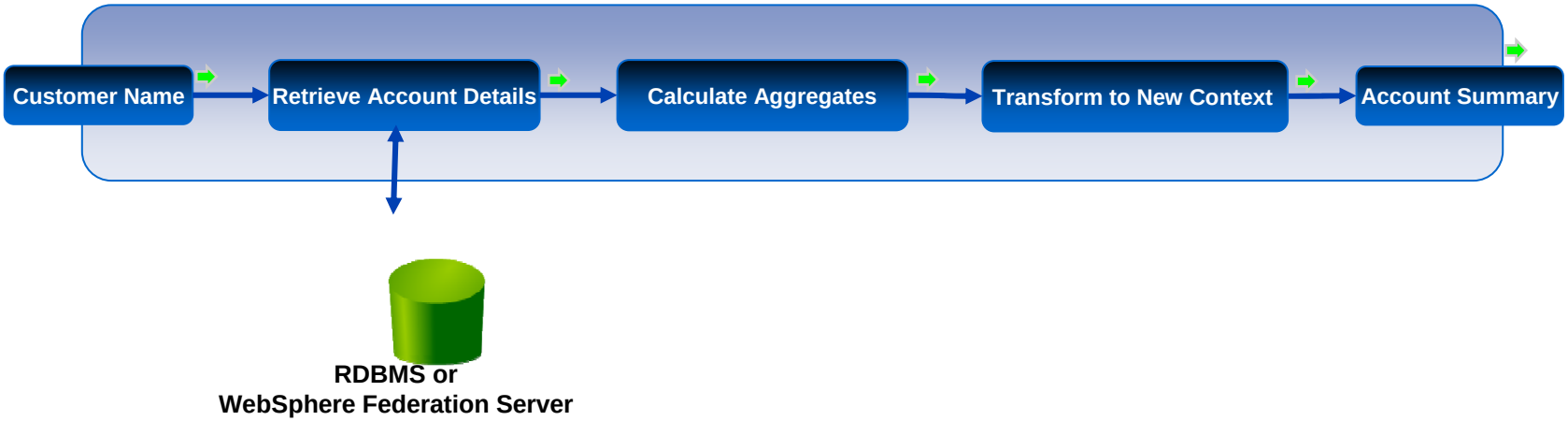


- **Data Federation Services**



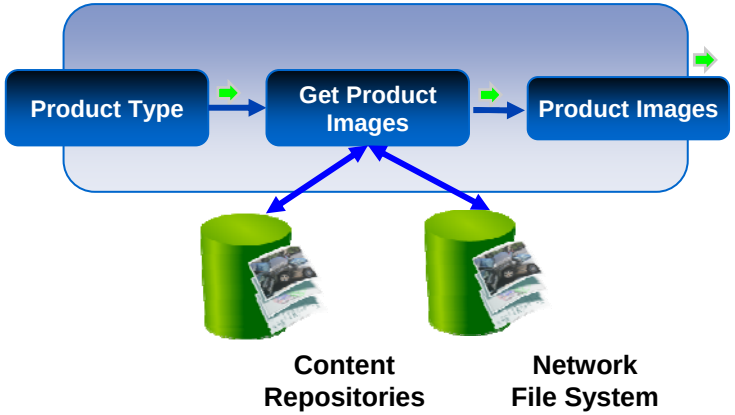
Types of Information Services - Information Integration Services - Cont.

- **Data Transformation Services**

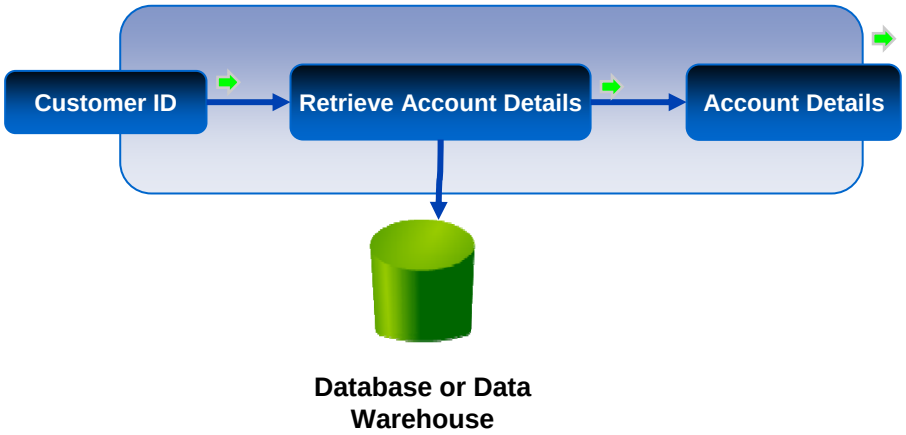


Types of Information Services - Content Services and Data Services

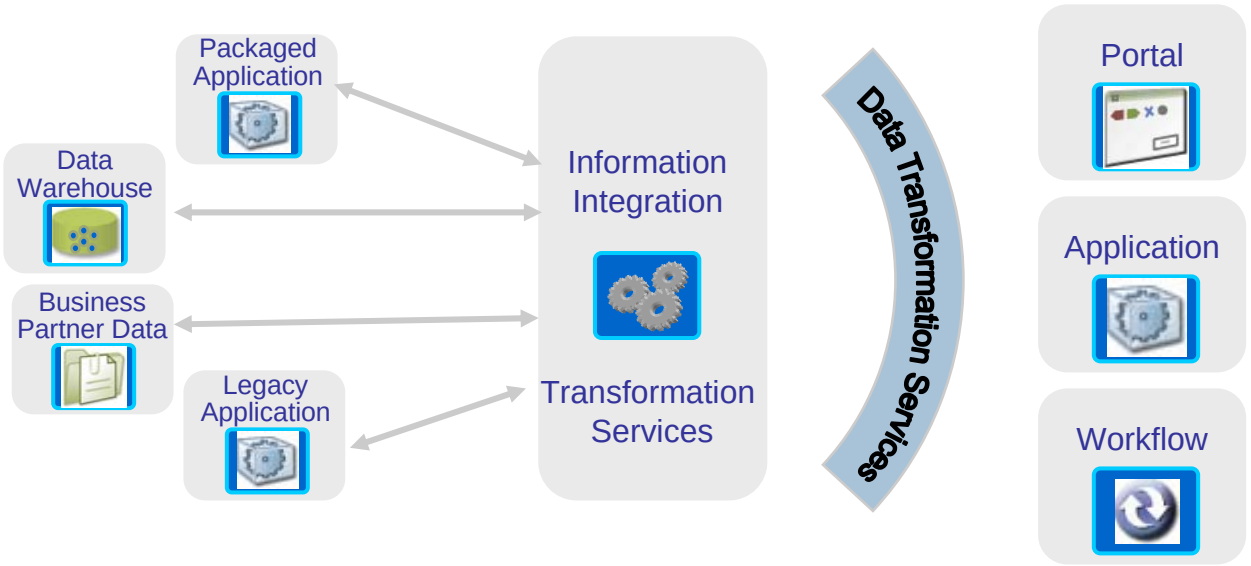
- **Content Integration Services**



- **Data Services**

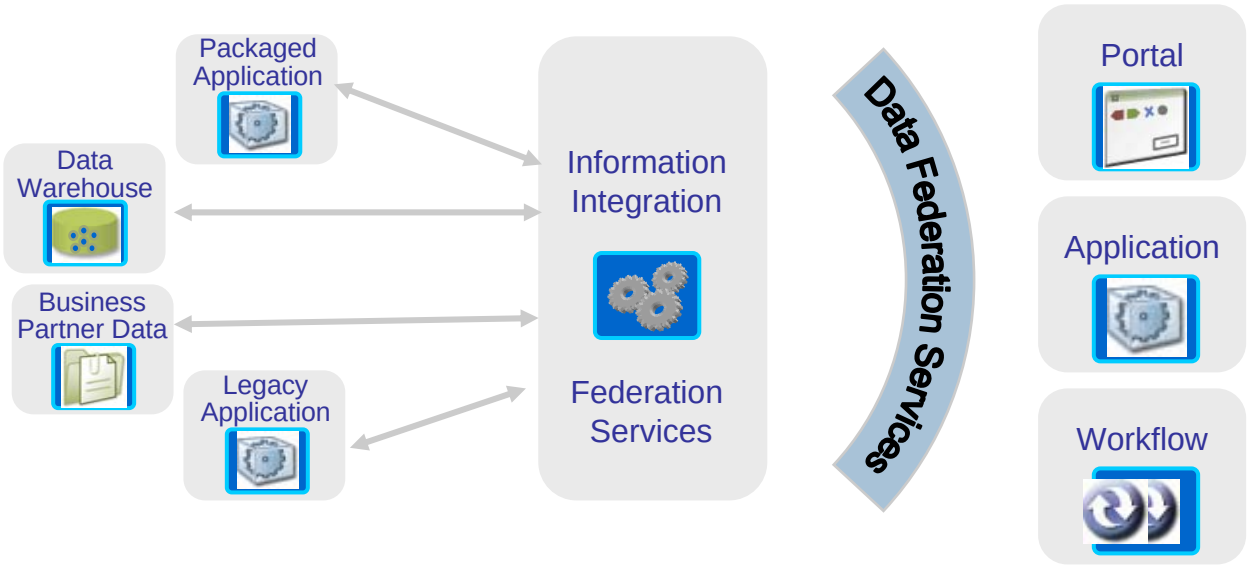


Customer Scenario – Data Transformation Services



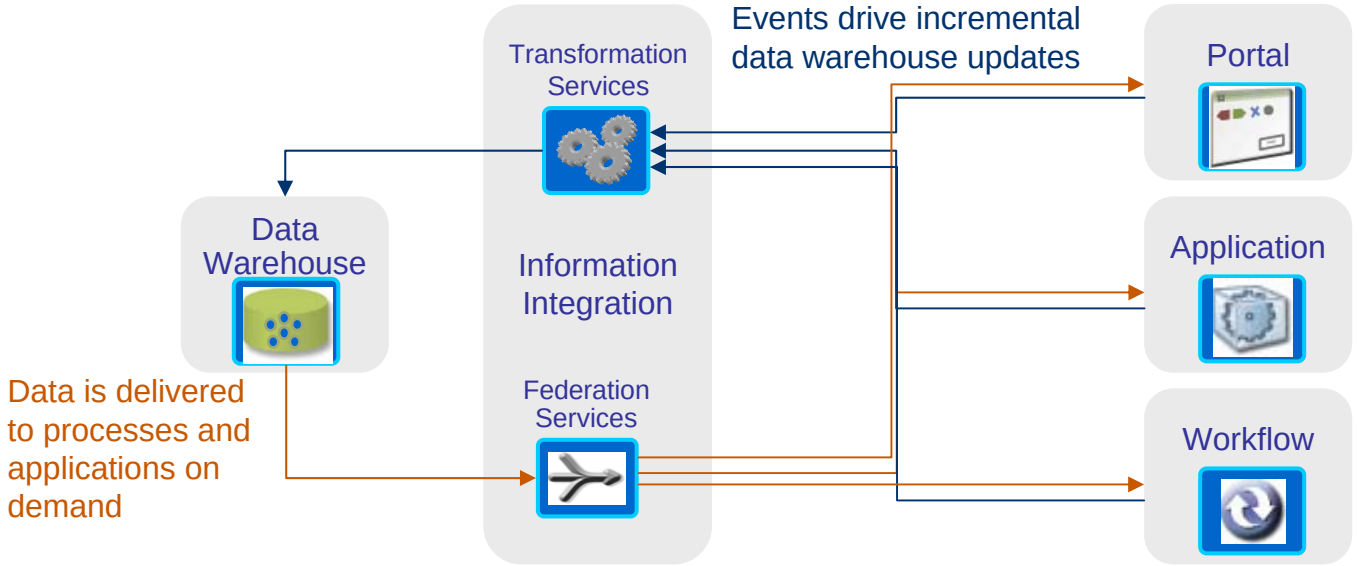
Customer Pain Points	IBM Value	Customer Example
• Every development project reproduces the same data transformation logic, with little reuse • Writing data transformation logic from scratch is very time-consuming and expensive • Different development projects use different logic for transforming data	• Allows consistent data integration to be leveraged in any type of project across batch and real-time requirements • Allows data integration tasks to be specialized within the technology and organization that performs them best • Enables an intuitive, complementary fit for data integration with EAI technology	• Eli Lilly • McDonald's • Pfizer

Customer Scenario – Data Federation Services



Customer Pain Points	IBM Value	Customer Example
• Every development project reproduces the same data access logic, with little reuse • Assumes the developer understands the data semantics • Code is hard-wired to data source so any changes to data source break the applications using them	• Single point of control of data governance • Applications are resilient to change • Creates a virtual layer which has broad reach within a single programming model 50% increase in programmer productivity.	• Taikang Life • BMW • Banque Populaire

Customer Scenario - On Demand Data Warehousing



Customer Pain Points

- Data latency not supporting management reporting and analysis requirements
- Inability to use analytical information within operational applications and processes
- Proliferation of data marts across departments

IBM Value

- Allows operational processes to be optimized with richer analytical data
- Increases the value of analytical data by reducing latency
- Reduces the need to proliferate data marts by providing access services
- Alleviates pressure on batch windows by allowing “trickle-feed” intraday

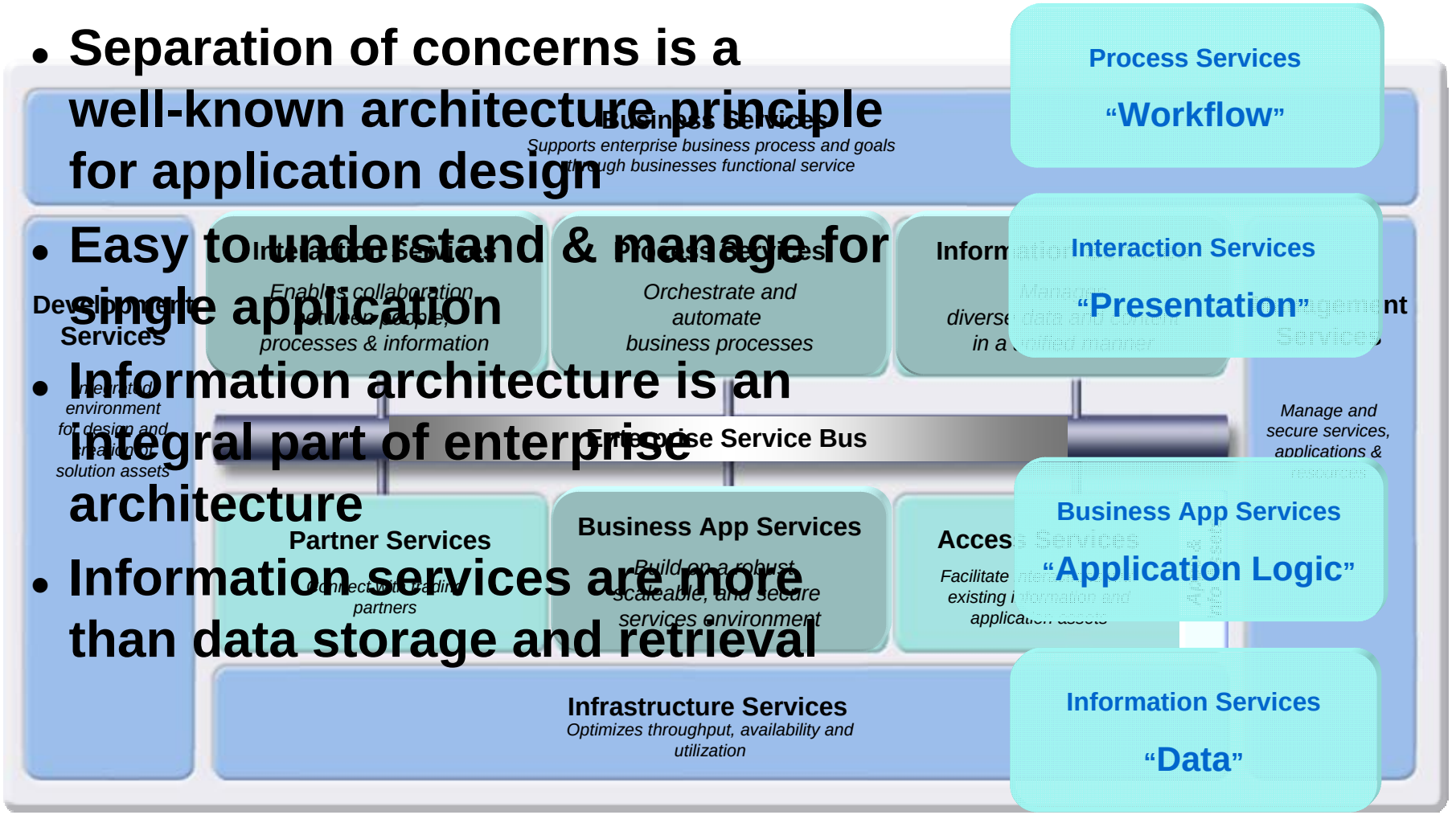
Customer Example

- XM Satellite Radio
- Pfizer
- Scotts
- Harley Davidson

SOA Information Architecture Considerations

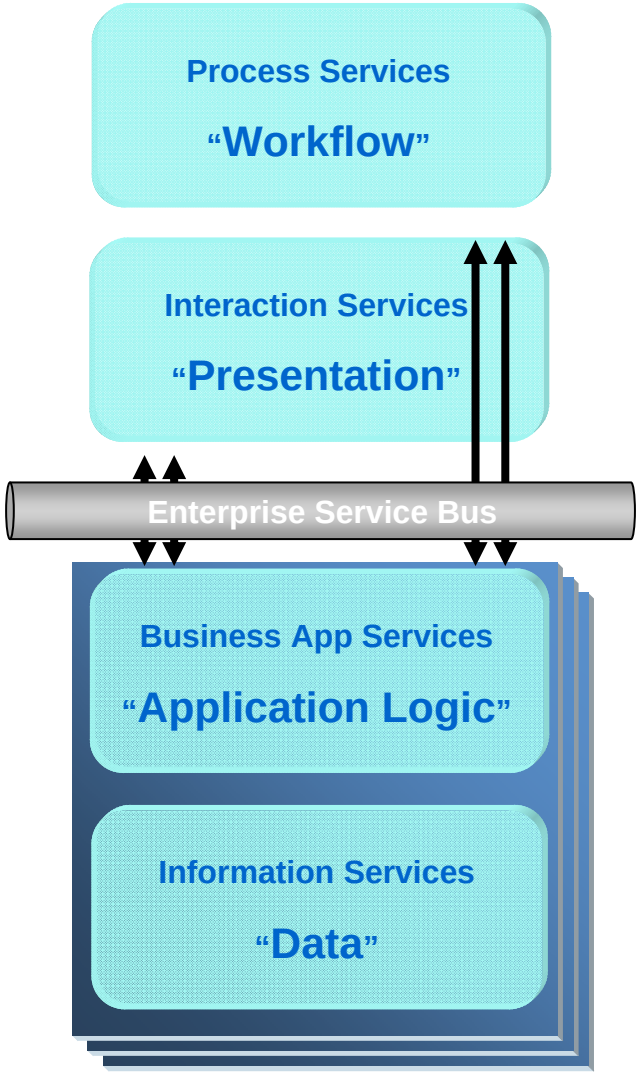
Separation of Concerns Even Before SOA…

- Separation of concerns is a well-known architecture principle for application design
- Easy to understand & manage for single application
- Information architecture is an integral part of enterprise architecture
- Information services are more than data storage and retrieval



Separations of Concerns in Enterprise Architecture Typically Focused on Exposing Application Services

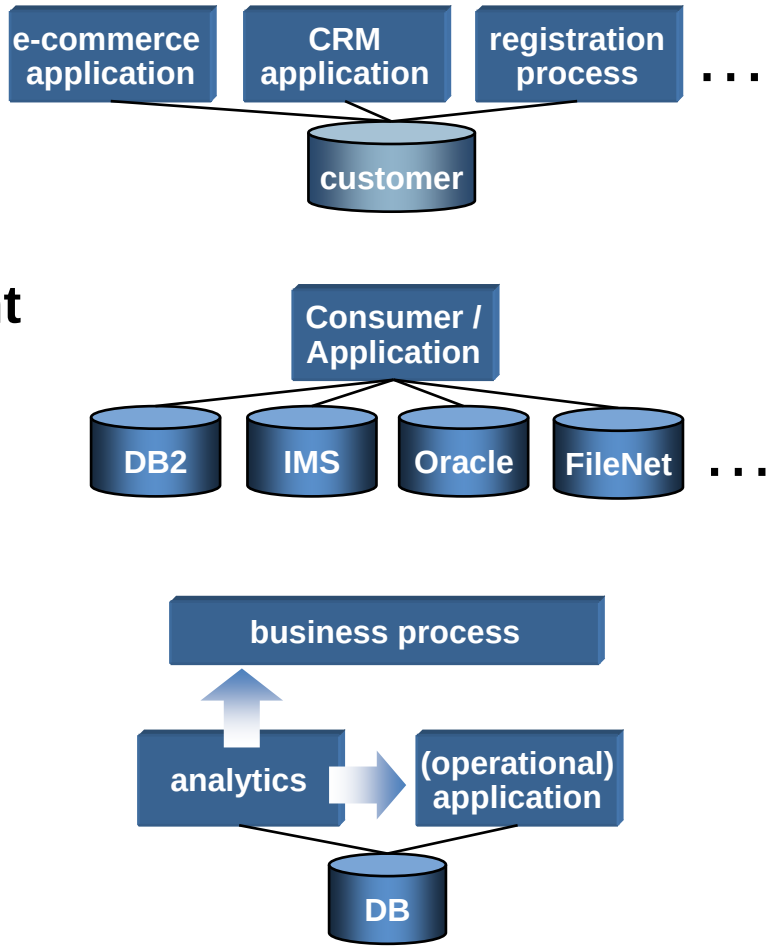
- **Exposing application logic as services is straight-forward and enabled by tooling**
- **The integration of services focuses on mediation (brokering) and orchestration (workflow) of application logic**



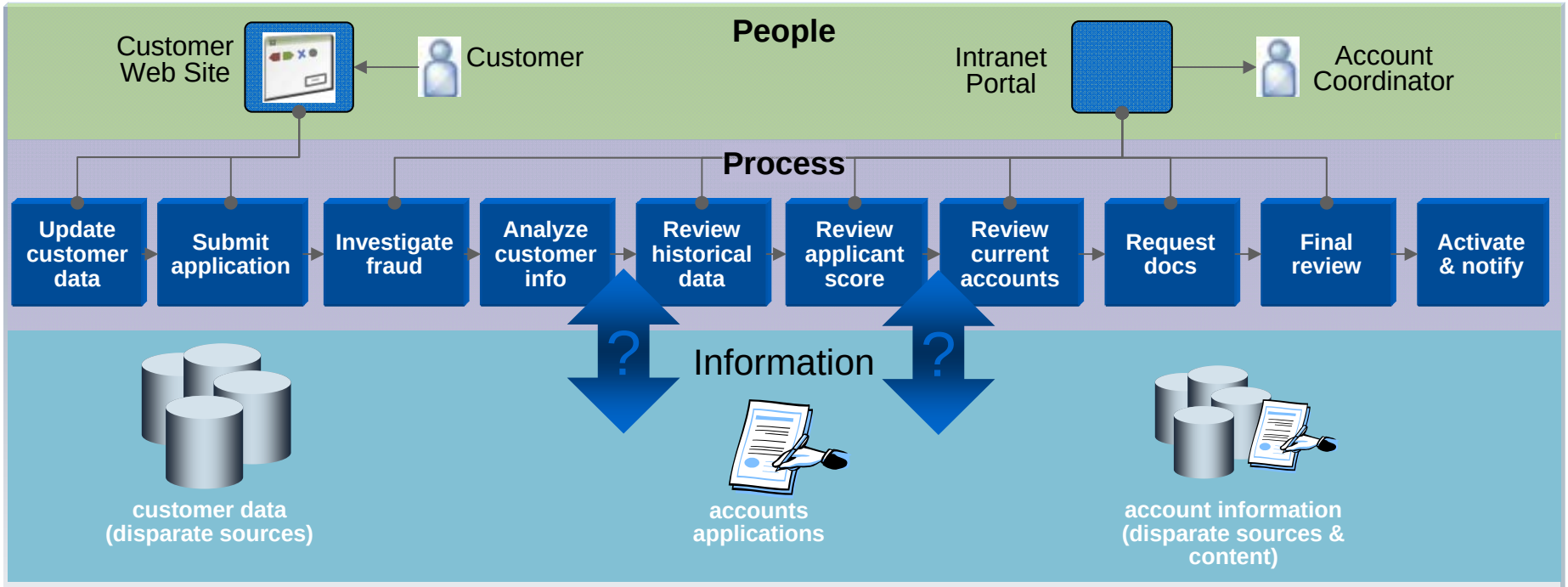
- As a result, data is tightly coupled with the corresponding application logic

Information, Applications and Processes Providing Separation of Concerns

- Reuse: leverage same information for multiple consumers, not just within one (silo) application
- Accessibility, distribution: understand, cleanse and effectively transform & integrate data & content
- Single version of the truth: build trusted source of information
- Access to analytical data: deliver real-time access to various consumers or as part of a business process



SOA Information Architecture Scenario



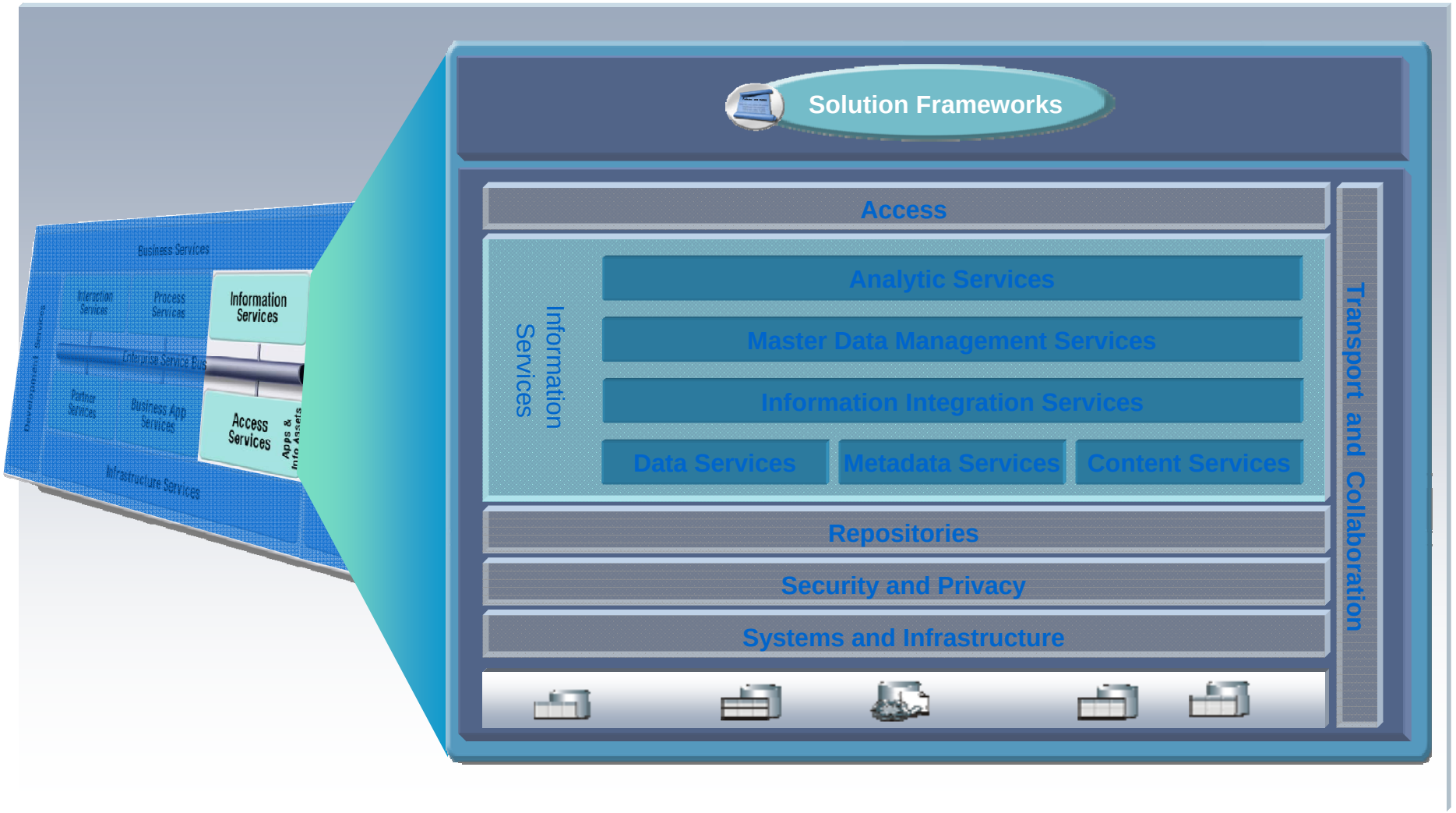
Many organizations face this situation…

Goal: **services that provide accurate, consistent, integrated information to business processes and people**

Starting point: **your existing legacy, inconsistent & diverse data**

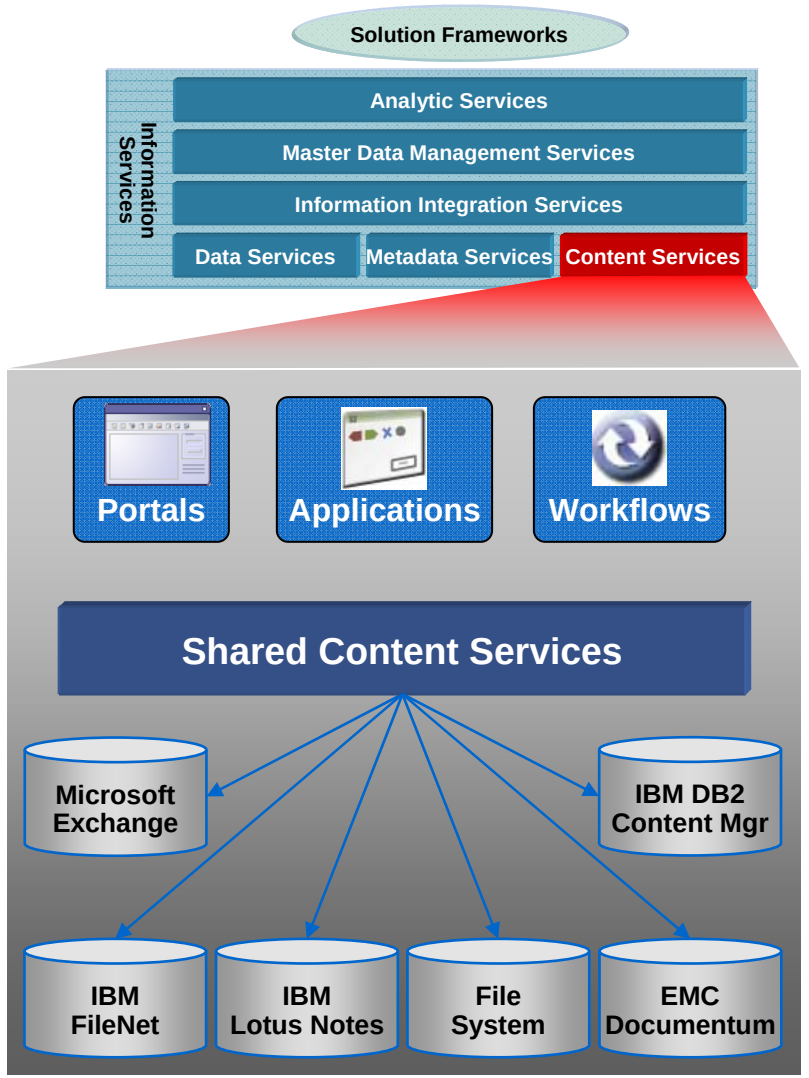
Approach: **Information as a Service**

Components of Information as a Service
Information Services from Information on Demand



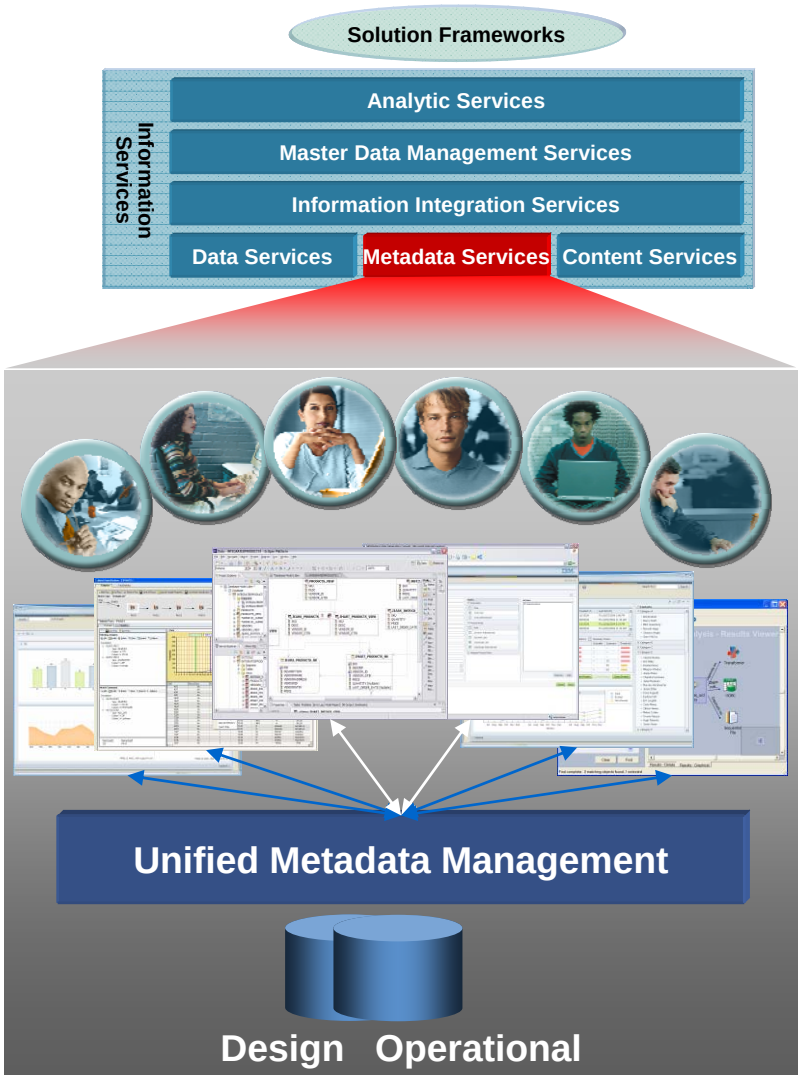
Integrate Unstructured Information Into SOA & Process Flow

- **Business Challenge**
  - Wasted time searching for information
  - Lack of automation to process unstructured information (paper-based, manual)
- **Key Capabilities**
  - Content-centric workflow to embed unstructured information into processes
  - Decouple content consumer from a variety of content repositories
- **Business Benefit**
  - Improved customer satisfaction along with increase in request to documents
  - Significant savings for initial rollout
  - Significant savings for each new business unit



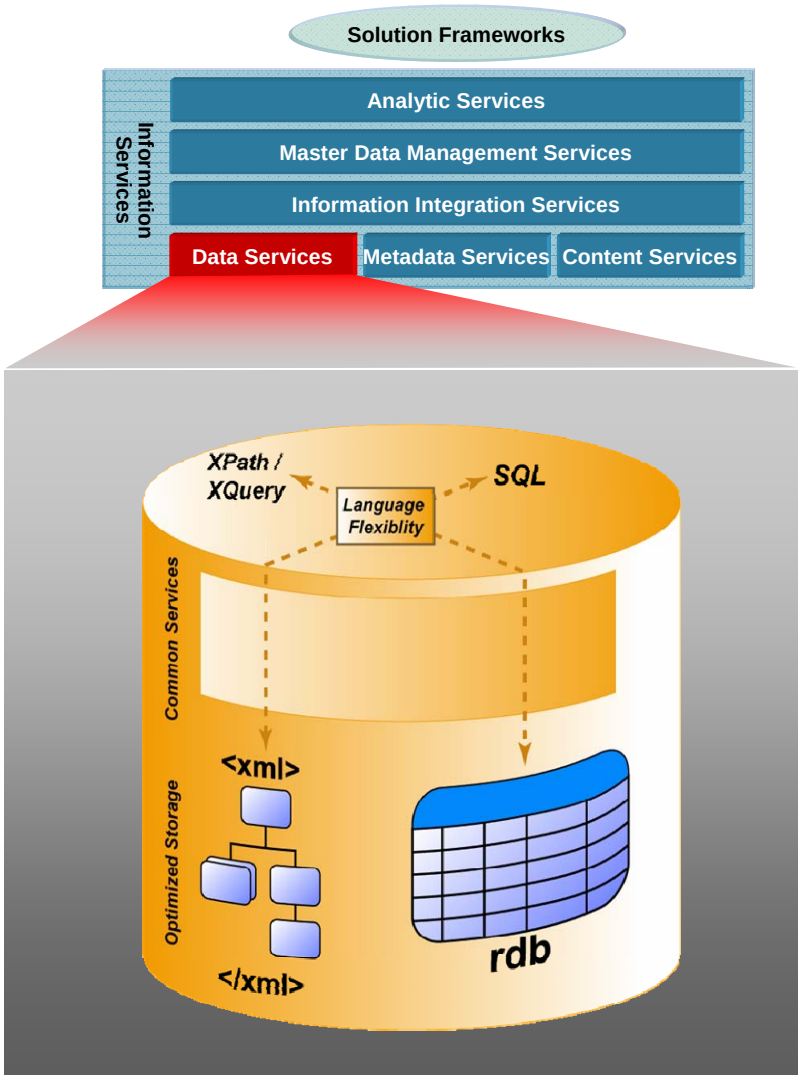
Shared Metadata Across Domains and Tools

- **Business Challenge**
  - IT staff spends too much time searching for artifacts related to their tasks
- **Key Capabilities**
  - Common metadata foundation to access and share artifacts
  - Role-based views and functionality
- **Business Benefit**
  - Improve common understanding
  - Improve collaboration
  - Increase in worker productivity



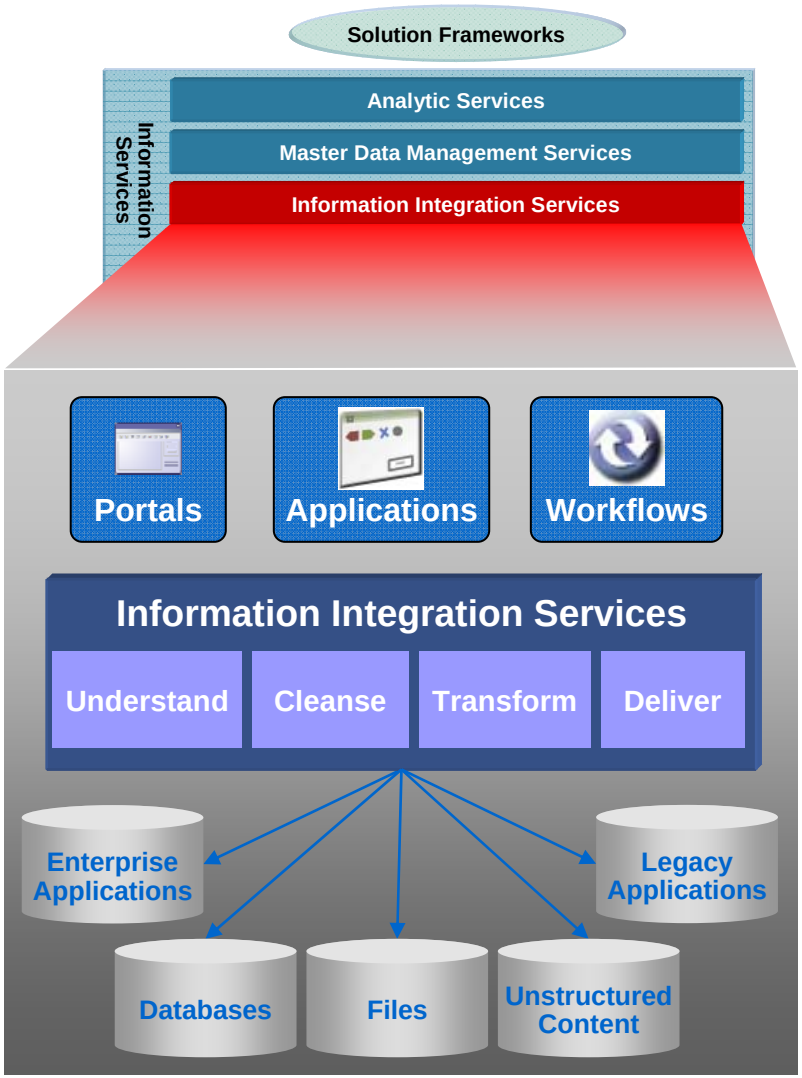
Unified Access to & Mgmt of XML & Enterprise Data

- **Business Challenge**
  - Lack of holistic view of enterprise information, specifically around XML and relational data
- **Key Capabilities**
  - Performance, integrity, protection, and scale combined with flexibility of XML
  - Manage XML and relational data holistically – in the same database
- **Business Benefit**
  - Significant reduction in development time and in iterative deployment
  - Significantly fewer lines of code
  - Significantly higher performance



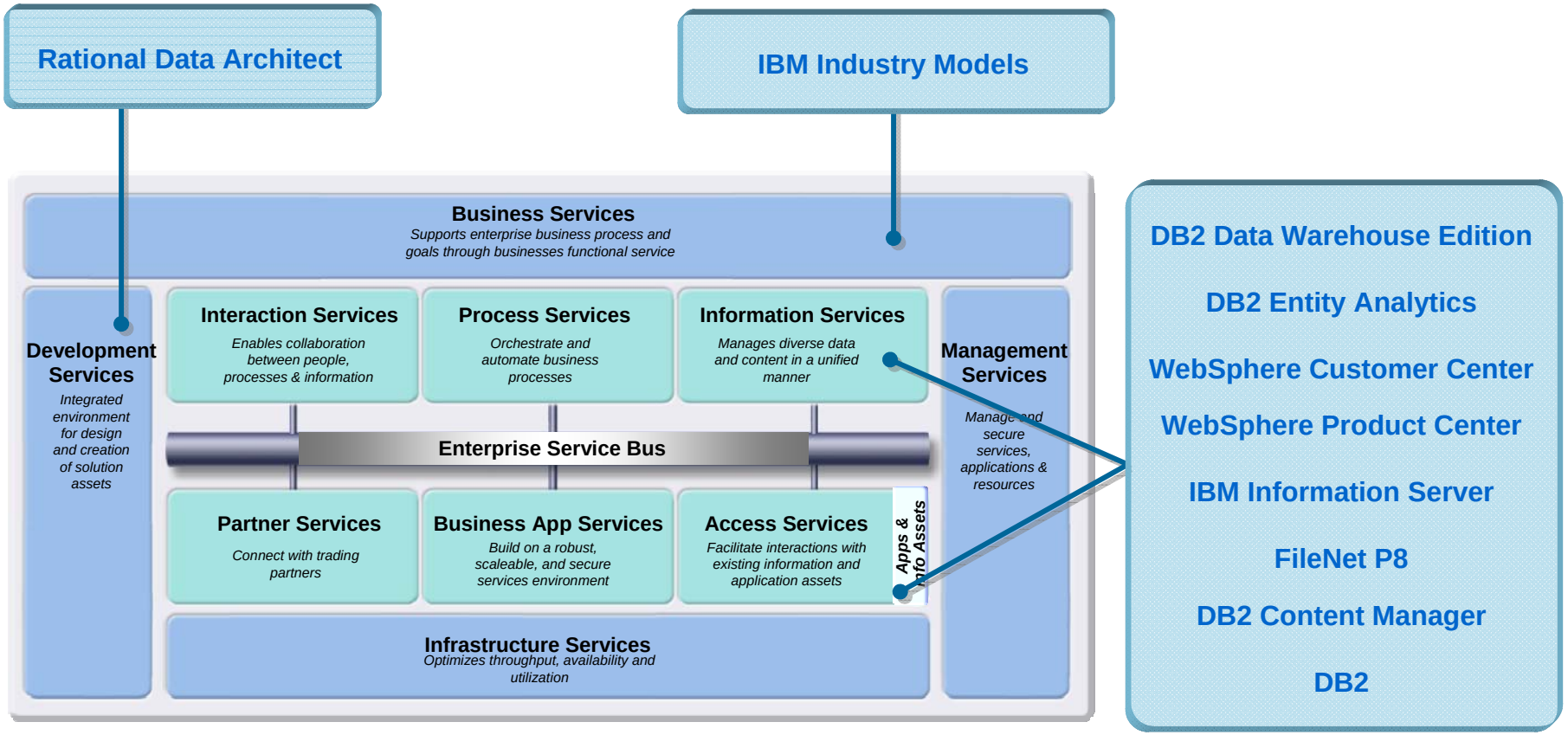
Single Interface to Disparate Data Sources

- Business Challenge
  - **Lack of business insight and poor decisions due to inaccurate, inconsistent and partial information**
  - **Significant overhead to provide correct data**
- Key Capabilities
  - **Profile & understand your service data**
  - **Enterprise-wide consistent cleansing rules for applications and data**
  - **Integrate and transform data from various sources (federate, consolidate)**
- Business Benefit
  - **Increased worker productivity: Information accessible to every user when and how they need it**



IBM Offerings

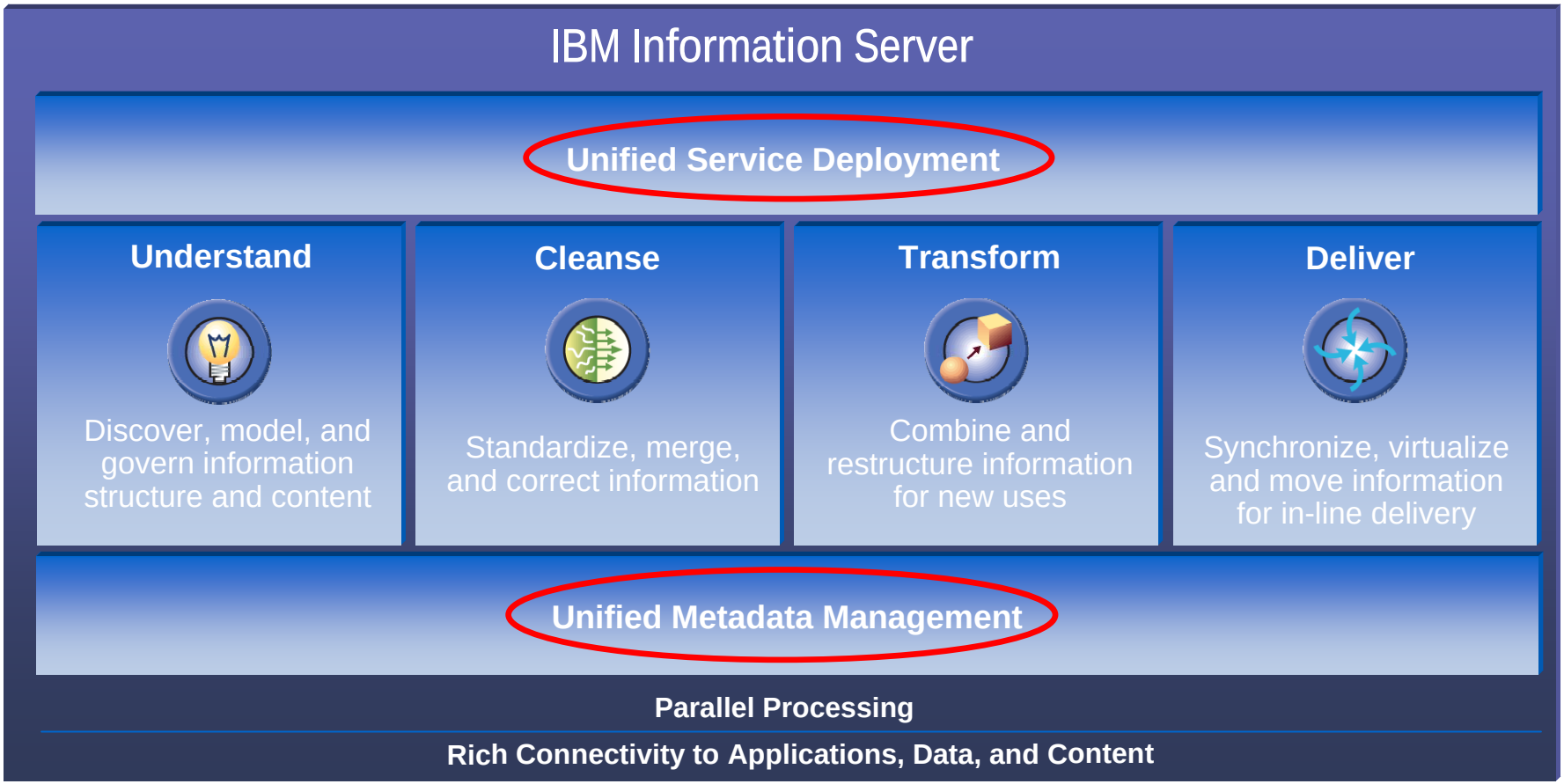
Mapping to the IBM Products



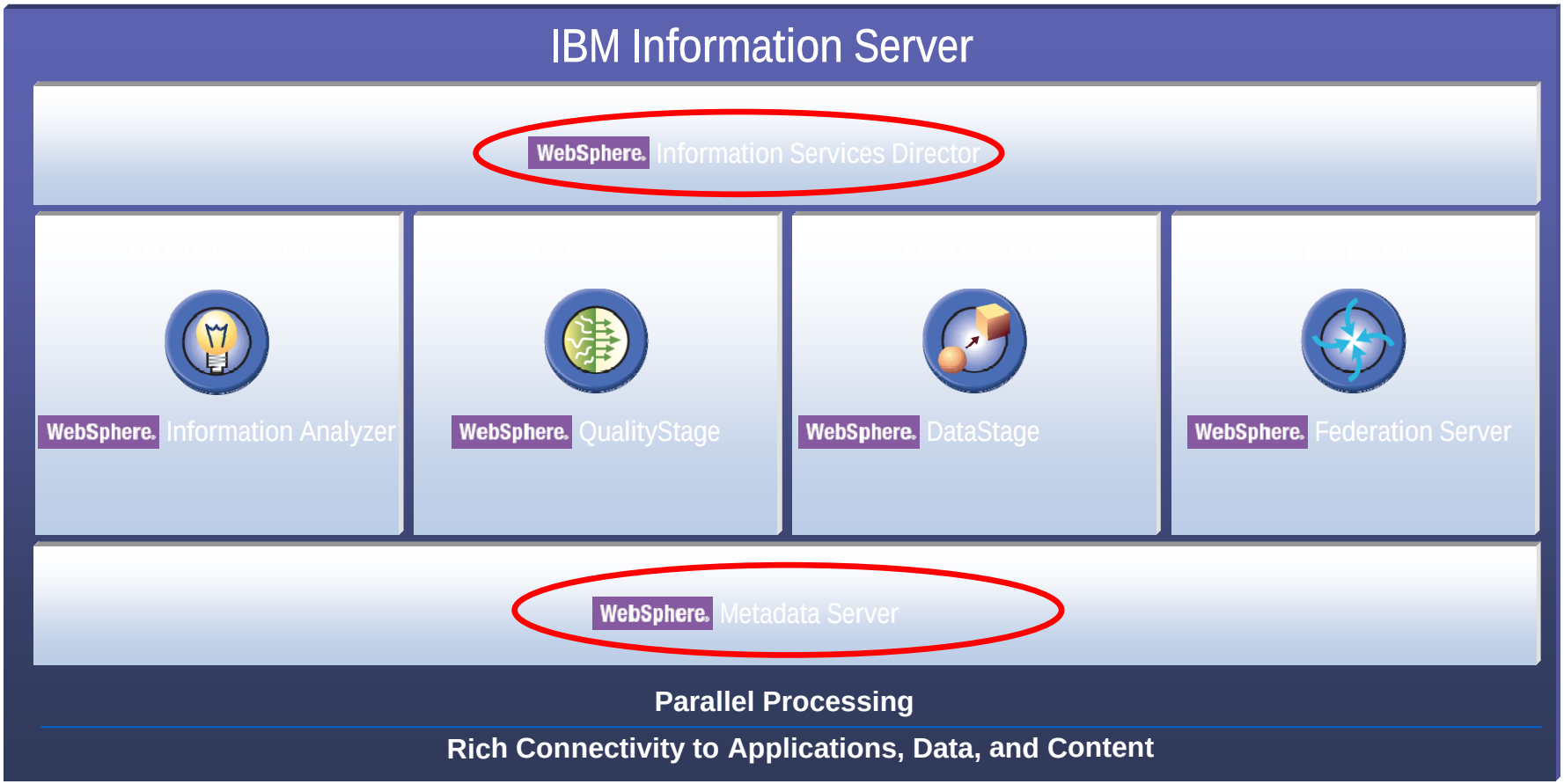
Information as a Service – Capabilities & Products

Information Service Enablement Information Server WebSphere Information Services Director WebSphere Classic Federation Server IMS SOAP (Web Service gateway for IMS) DB2 WORF DB2 9 with pure XML	Insulates applications from source changes Simple service enablement of mainframe data Native XML & relational hybrid DB Persists messages, preserves integrity
Integrated Information Services IBM Information Server WebSphere Federation Server WebSphere DataStage/QualityStage Server WebSphere Classic Federation Server	Complete Information Integration platform Analyzes, cleanses, transforms & federates Integrated, trusted information as a service
Master Data Services WebSphere Customer Center WebSphere Product Center DB2 Entity Analytics	Master data management Manages & controls core business entities Elevates critical data to a business asset
Content Services WebSphere Information Integrator Content Edition DB2 Content Manager IBM FileNet P8 platform	Heterogeneous content federation Single service access to global content Easy service-oriented content access

IBM Information Server
Delivering information you can trust



IBM Information Server
Delivering information you can trust



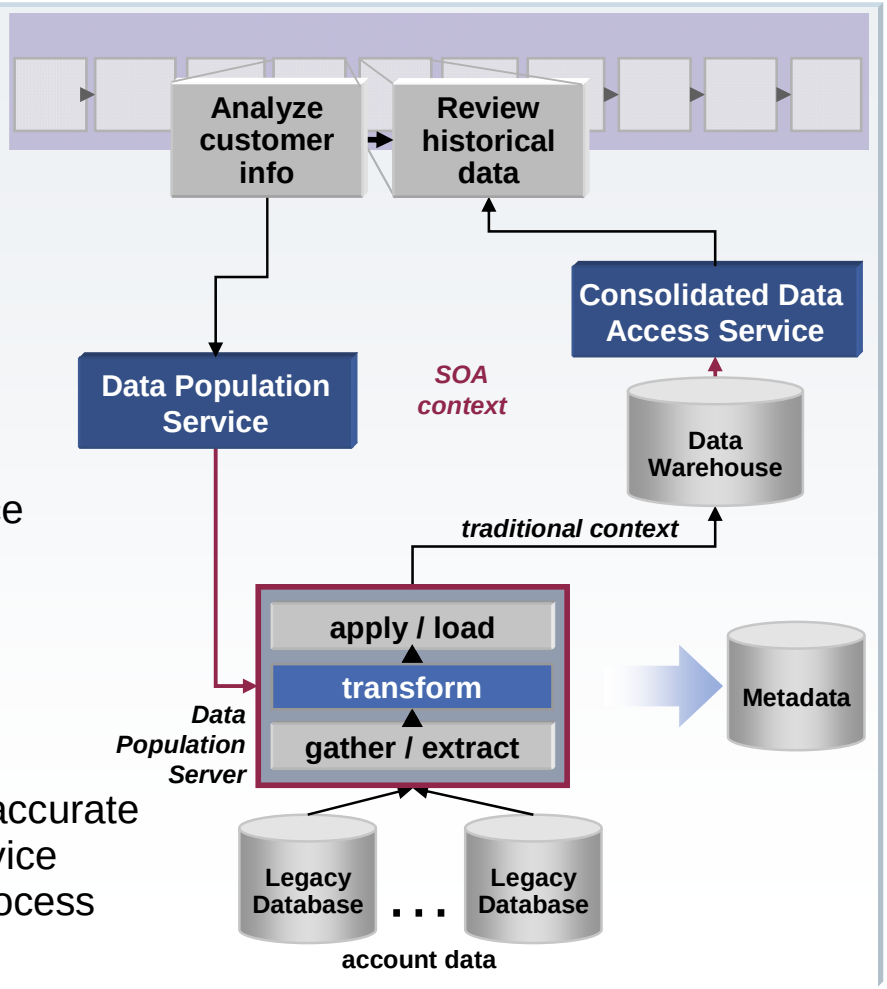
NEXT: Introducing the Lab

Information as a Service – Data Federation

- 2 Data bases
- Build federation
- Creating a view
- Test

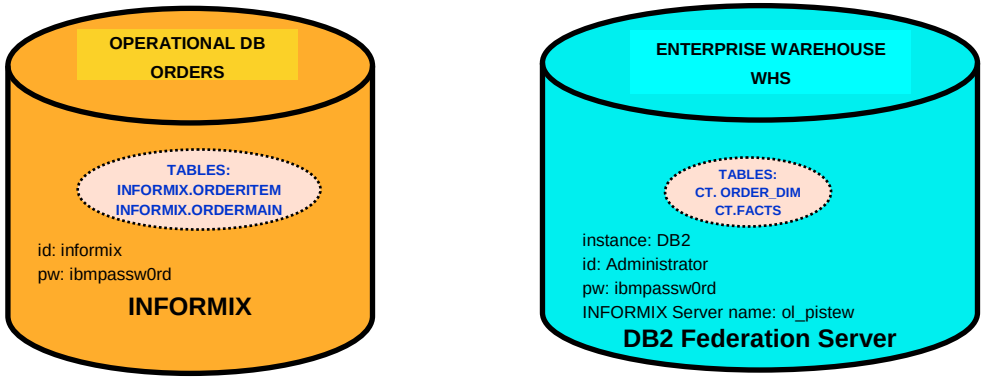
Transform Your Data
Create Trusted Information from Disparate Sources

- **As-Is Environment**
  - Data resides in disparate sources
  - Manual & redundant integration of data by multiple consumers results in high costs and inconsistent/inaccurate data
  - Slow response time due to large data volume and complex transformations
- **Solution Characteristics**
  - Apply transformations on extracted source data; copy into consolidated target and expose consolidated data as services
  - Invoke population from business process
- **Results**
  - Multiple consumers can access trusted, accurate and integrated information through a service
  - Data availability aligned with business process



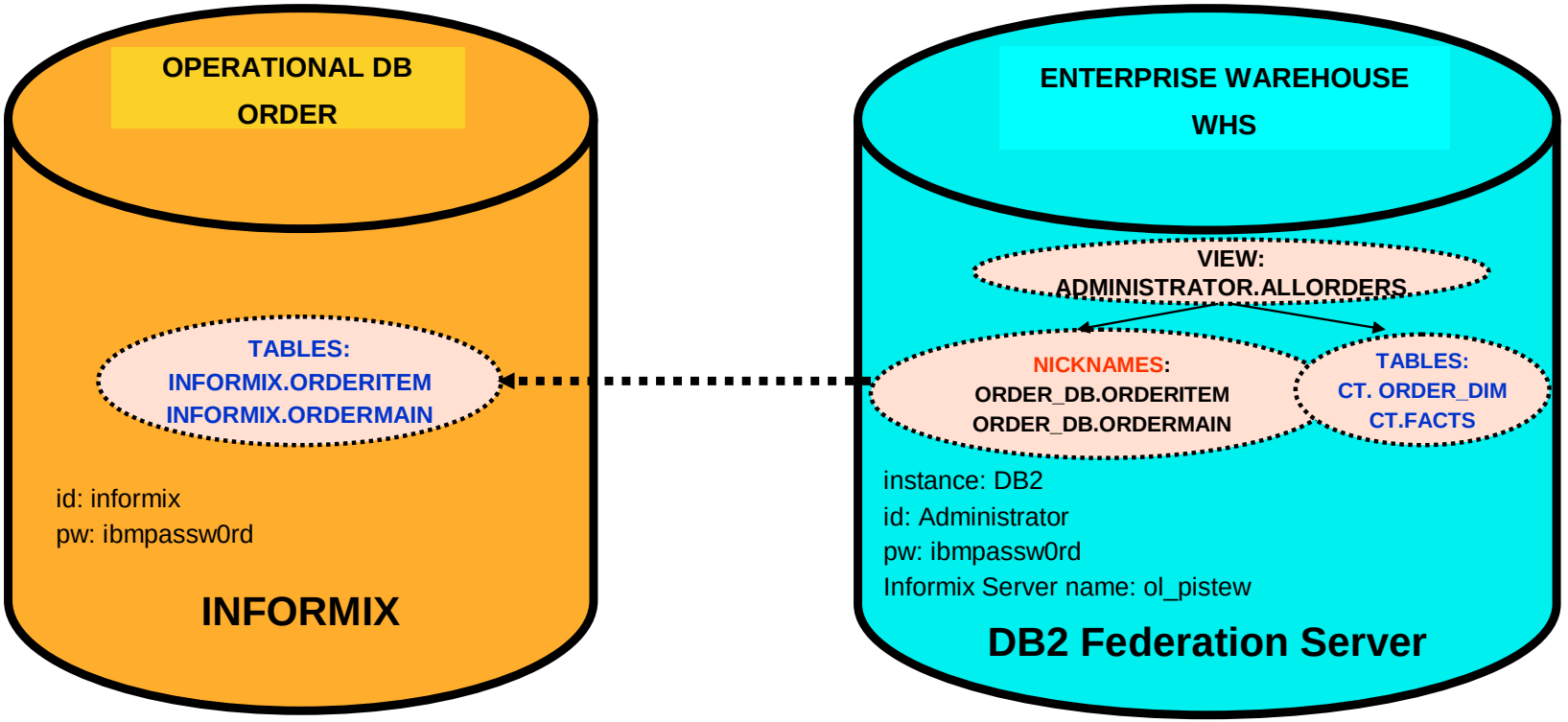
Data Layout before Data Federation

Existing Environment:



Data Layout after Data Federation

Live Federated Data Access



Lab IaaS
45 Minutes

Enjoy the Lab