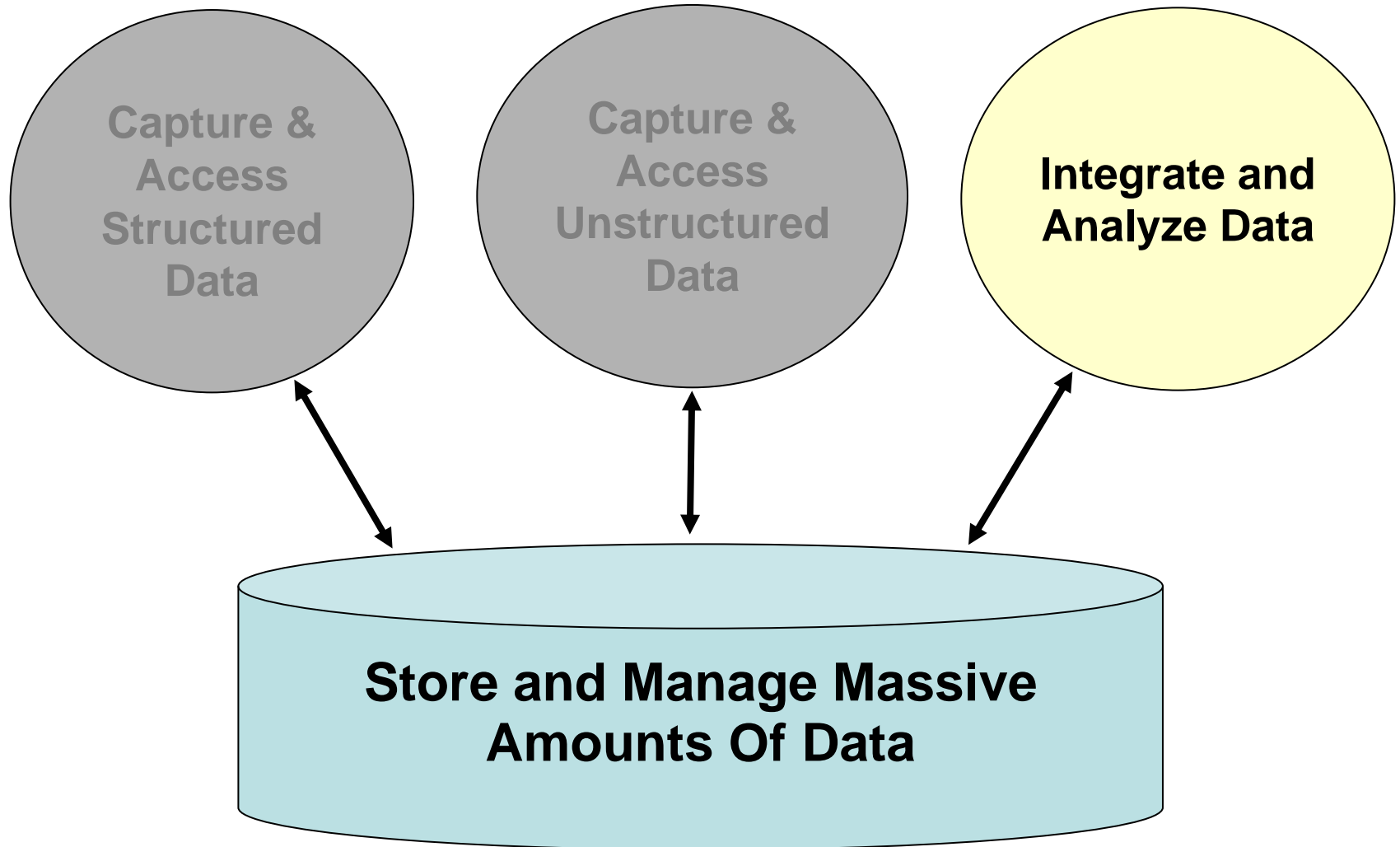# System z Enables Solutions For A Smarter Planet

Utilizing IBM Information Management Software And System z To Make Smarter Business Decisions

New Intelligence Can Deliver Even More Business Value

Capture & Access Structured Data

Capture & Access Unstructured Data

Integrate and Analyze Data

Store and Manage Massive Amounts Of Data

Without New Intelligence Business Decisions Can Be Suspect…

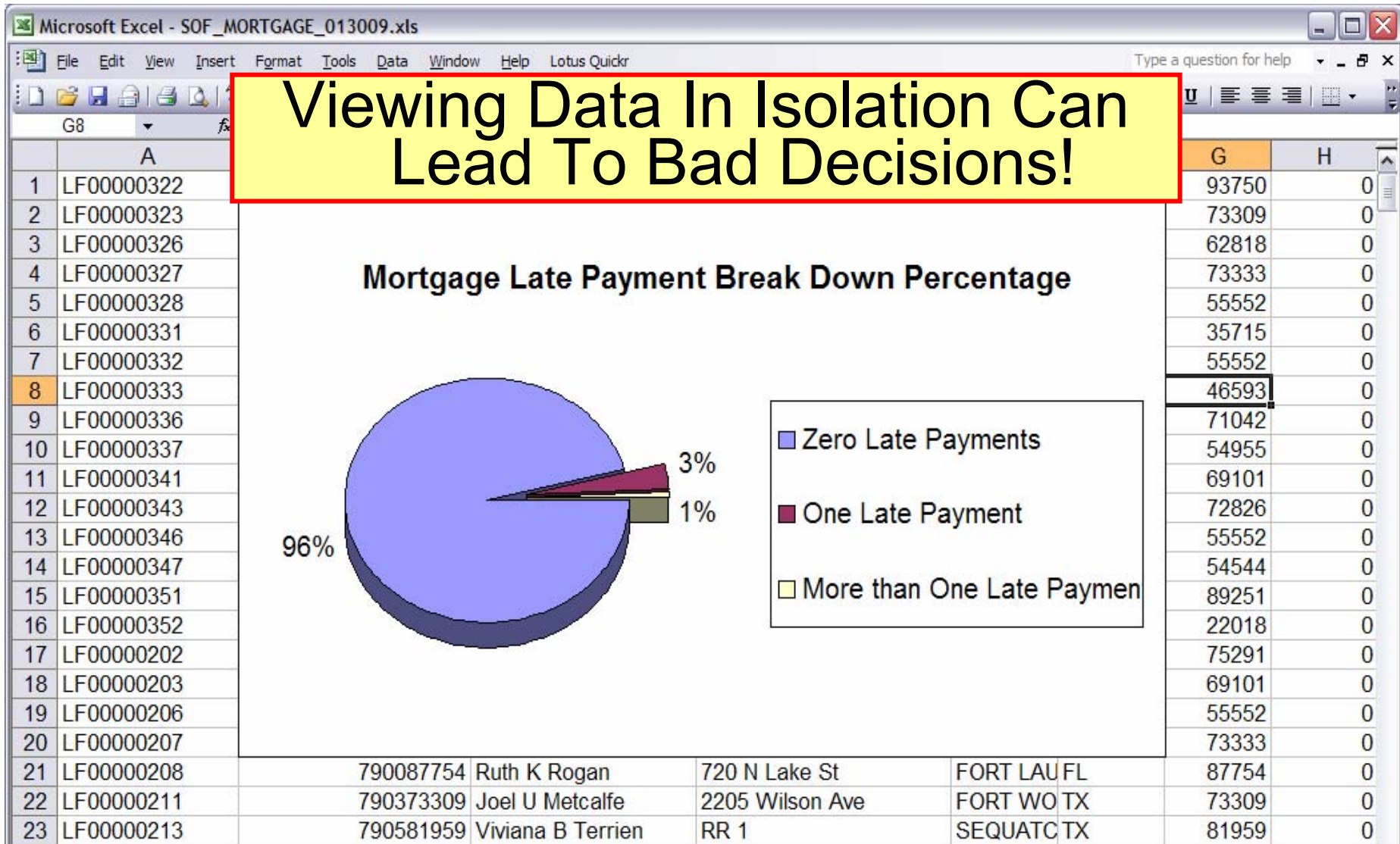**The mortgage line of business is doing well. Our late payment rates are very low.**

Then why are other areas of our business seeing problems…

Mortgage Line of Business VP

Service Oriented Finance CEO

Isolated Customer Information Leads To An Incomplete View Of The Business

Viewing Data In Isolation Can Lead To Bad Decisions!

Mortgage Late Payment Break Down Percentage

- Zero Late Payments — 96%
- One Late Payment — 3%
- More than One Late Payment — 1%

Service Oriented Finance Needs A Complete View Of Their Customers

- **Problem**: Segmented lines of business store their data in isolated silos
  - ▶ Banking, Credit Cards, Mortgage, Consumer Loans

- **Requirement**: Identify customer trends faster by viewing data from across all areas of business

- **<u>Solution</u>**: Create new intelligence by building an enterprise data warehouse containing a complete view of customer information

Create New Intelligence With IBM Information Management Software

Cognos 8 BI

InfoSphere Warehouse on System z

InfoSphere Information Server

Reports and Dashboards

Data Warehouse

Extract Transform Load

Savings

Credit Cards

Checking

Mortgages

Loans

Collect Historical Data

Operational Data Source

Business Intelligence

ETL Processing

Scalable Database

Connections
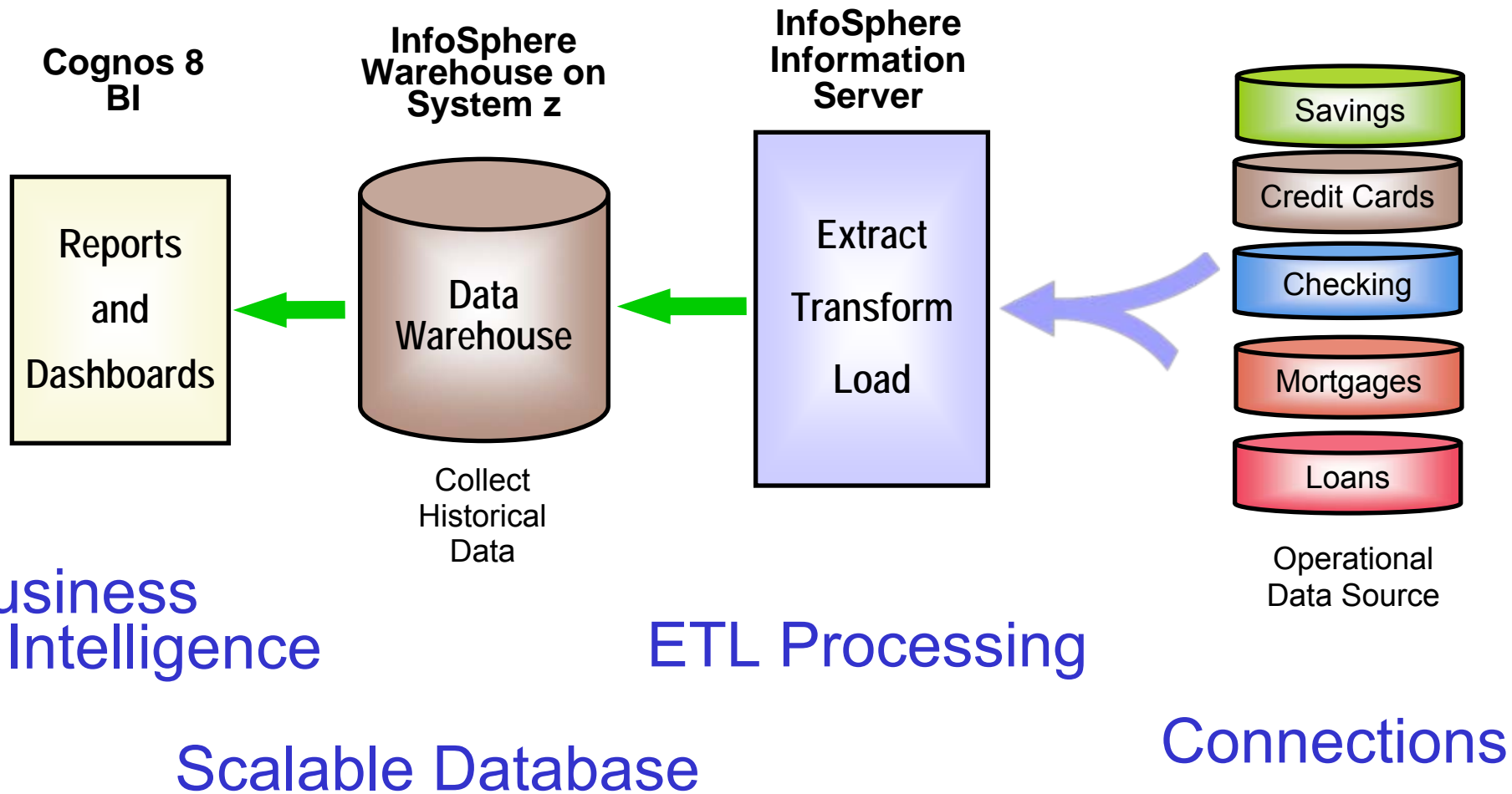
Industry Data Models Help You Get Started

Where do we start?

Service Oriented Finance CIO

IBM industry data models can help you get started quickly.

IBM

IBM Industry Data Models Accelerate Your Data Warehouse Solution

- Industry Data Models are:
  - Best practices from over 400 IBM clients
  - Built on InfoSphere Information Server and InfoSphere Data Architect

- Industry Data Models include:
  - Enterprise Data Warehouse (EDW) Model
  - Business Terminology Data Model
  - Business Solution Templates (BST)

- Industry Data Model Business Benefits
  - 83% report their Data Warehouse is better aligned with business needs
  - Over 50% report that businesses are now getting the information they want

- Industry Data Model Development Benefits
  - 15-20% cost savings to build the warehouse
  - 20-25% decrease in the time spent in design phase
  - 30-40% decrease in time spent in the modeling phase

- Source Hurwitz

InfoSphere Warehouse on System z Is An Excellent Base For Your Data Warehouse

- **Based on DB2 for z/OS**

- **Superior scalability due to System z sysplex exploitation**

- **Parallel queries, Materialized Query Table, Star Join Enhancements optimize performance**

- **Near continuous on-line availability**

- **System z I/O bandwidth benefits warehouse performance**

- **Data compression beats Oracle**

- **Proven security**

- **zIIP exploitation achieves lowest cost**

- **Benefits from built-in storage virtualization**

Rapid Data Integration With InfoSphere Information Server

Data integration has many complexities; Metadata, ETL, connectivity, performance, etc. How can we simplify our approach?

IBM has a consolidated platform that overcomes the difficulties of data integration. Let me tell you about InfoSphere Information Server

Service Oriented Finance CIO

IBM

IBM InfoSphere Information Server

A consolidated platform for information integration

IBM InfoSphere Information Server for System z

Understand	Cleanse	Transform	Deliver
Discover, model, and govern information structure and content	Standardize, merge, and correct information	Combine and restructure information for new uses	Replicate, virtualize and move information for in-line delivery

Platform Services

Parallel Processing Services	Connectivity Services	Metadata Services	Administration Services	Deployment Services

InfoSphere Information Server Can Load Your Data Warehouse

InfoSphere Warehouse on System z

Data Warehouse

Collect Historical Data

InfoSphere Information Server

Extract

Transform

Load

Savings

Credit Cards

Checking

DB2 9.1 for z/OS VUE

Mortgages

Oracle 10g

Loans

SQL Server 2008

Operational Data Source
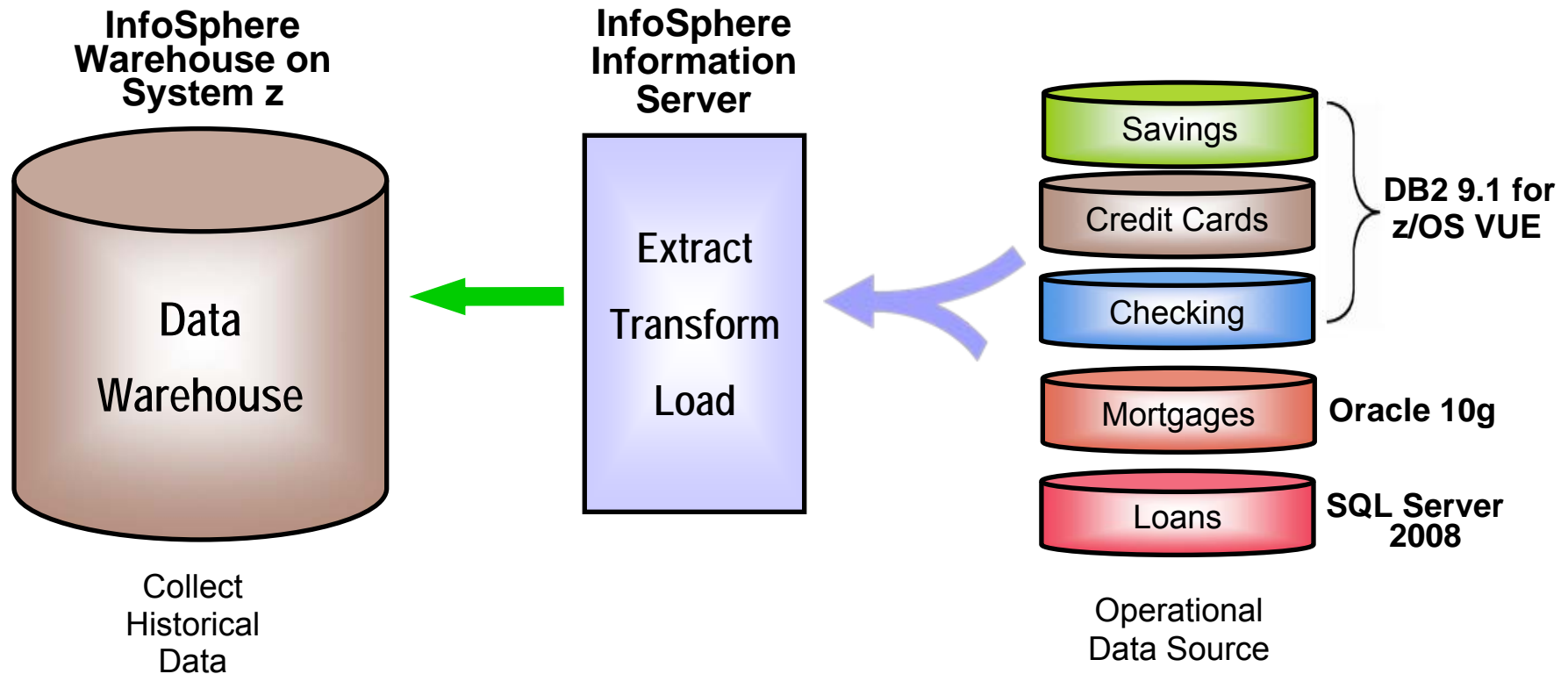
Extract, Transform, and Load (ETL) Jobs Map Data From Sources To Targets

A few simple examples:

Mapping source columns to targets

Different column names and order

Generating new column values

Converting data types and formats

PROD ID	CUST ID	SOURCE ID	QTY	BAL	SALEDATE
000 101	100	01	1	$10,000.00	2007-02-28
000 121	100	01	3	$500.50	2007-02-28
000 102	101	01	1	$ 20,000.00	2007-03-01

Target: Data Warehouse
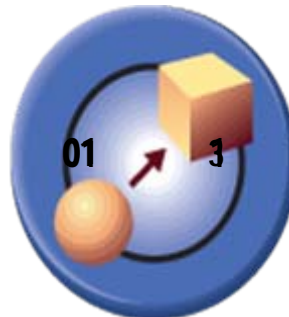
000 101   100   01   3 $20,000.00   2007-02-28

Transform

PRODUCT	QTY	CUSTNO	BALANCE	DATE
101	01	100	10000	02-28-2007
121	03	100	500.50	02-28-2007
102	01	100	20000	03-01-2007

Source: Operational Data

A successful data integration project requires a detailed specification for the business goals and technical requirements!

InfoSphere FastTrack Creates Data Maps And Specifications For Your Data Integration Projects

- Create simplified data maps and transformations using drag and drop
  - ▶ Automatically discover source and target columns
    - − Uses database introspection and Web 2.0-style tagging
    - − Use business terms to accurately match source to target

- Data analysts and developers share project specifications
  - ▶ Collaboration and reuse improve productivity
  - ▶ Use metadata common to all Information Server tools
  - ▶ Standard formats and centralized management for governance
    - − Synchronize work across global teams

- Generate ETL code directly from job specifications
  - ▶ Reduces costs and errors in ETL job development

Oracle doesn't offer any of these capabilities

InfoSphere FastTrack Automatically Discovers Data Mappings Using Business Term Tags

Mortgage To Warehouse Mapping Specification

Source	Target	Tag
Times_Past_Due	Credit_Events	Failure_To_Pay
Current_Balance	Ending_Balance	Period_Balance
Account_Num	Account_ID	Arrangement
Account_Holder	Customer_ID	Party_ID

Source Discovery
Mortgage.Times_Past_Due
Checking.NSFCount
Loans.MissedPayments
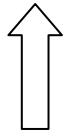
Metadata From Information Server

Tags come from:
- Industry data models
- Your corporate standards
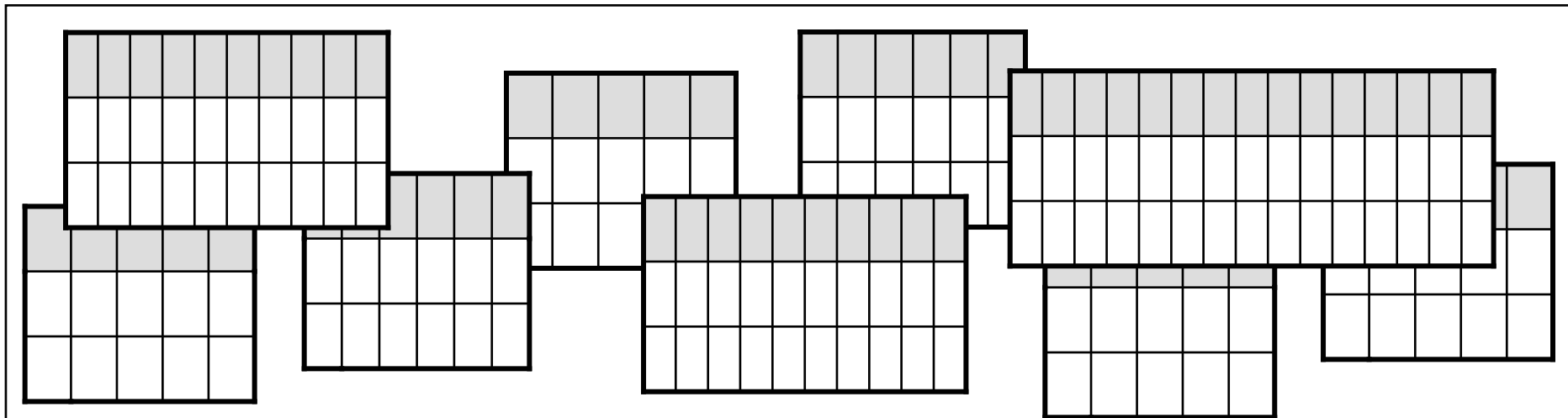
DEMO: Use InfoSphere FastTrack To Create ETL Specification For Warehouse

- Use discovery feature to find source columns matching business term tags
- Generate ETL job for InfoSphere DataStage

InfoSphere DataStage Creates The Technical Implementation Of Data Integration Jobs

- Creates graphical data integration jobs using hundreds of pre-built transformation and data quality functions
  - ▶ Batch & real-time operations

- Stores and retrieves metadata from Information Server
  - ▶ Allows easy reuse of integration work between projects

- Advanced parallel processing capabilities
  - ▶ Dynamic partitioning and pipelining
  - ▶ Scale jobs across additional hardware without modification

- Easily deploy data integration jobs as services for SOA
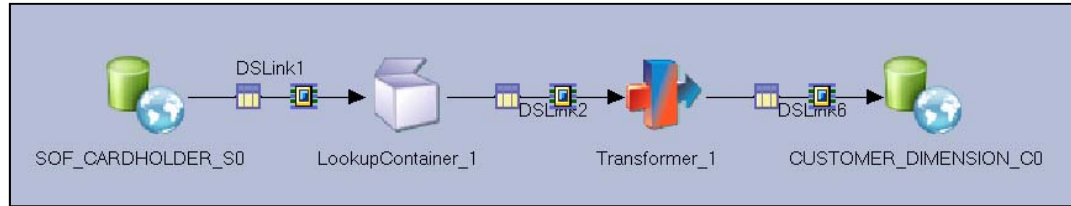
Database

Classic Federation	DB2 UDB API	DB2/UDB Enterprise	DB2Z	Dynamic RDBMS
Informix CLI	iWay Enterprise	ODBC	Oracle Enterprise	Stored Procedure

Processing

Aggregator	Change Apply	Change Capture	Compare
Compress	Copy	Decode	Difference
Encode	Expand	External Filter	Filter
FTP Enterprise	Funnel	Generic	Join
Lookup	Merge	Modify	Pivot
Remove Duplicates	Slowly Changing Dimension	Sort	Surrogate Key Generator
Switch	Transformer		

Real Time

Java Client	Java Transformer	Web Services Client	Web Services Transformer
WebSphere MQ Connector	WISD Input	WISD Output	XML Input
XML Output	XML Transformer		

IBM InfoSphere Information Server Connects To Almost All Sources Of Data

RDBMS
DB2 (on z, I, P or X series)
Oracle
Informix (IDS and XPS)
Ingres
MySQL
Netezza
Progress
RDB
RedBrick
SQL/DS
SQL Server
Sybase (ASE and IQ)
Teradata
Universe
UniData
NonStopSQL
And more…..

General Access
Sequential File
Complex Flat File
File / Data Sets
Named Pipe
FTP
Compressed / Encoded Data
External Command Call
Parallel/wrapped 3rd party apps
EMC InfoMover
Web logs
Unstructured: e-mail, docs, etc.
Content Management Systems
Life Sciences

Standards and Real Time
WebSphere MQ
Java Messaging Services (JMS)
Java
XML and XSL-T
EBXML
Web Services (SOAP)
Enterprise Java Beans (EJB)
EDI
FIX
SWIFT
HIPAA

Legacy
Allbase/SQL
C-ISAM
D-ISAM
Datacom/DB
DS Mumps
Enscribe
Essbase
FOCUS
IDMS/SQL
ImageSQL
Infoman
KSAM
M204
MS Analysis
Nomad
Nucleus
RMS S2000
Supra
TOTAL
TurboImage
Unify
And many more….

Enterprise Applications
JDE/PeopleSoft EnterpriseOne
Oracle Applications
PeopleSoft Enterprise
SAS
SAP R/3 and BI
SAP XI
Siebel
JDA
Ariba
Manugistics
I2
And more…

CDC / Replication
DB2 (on z, I, P, X series)
Oracle
SQL Server
Sybase
Informix
IMS
VSAM
ADABAS
IDMS
NonStopSQL
Enscribe

Offering more connectivity than Oracle

DEMO: Use InfoSphere DataStage To Load The Data Warehouse

1. **Show the DataStage ETL job generated by FastTrack**
2. **Run the DataStage Job to populate the data warehouse fact table**
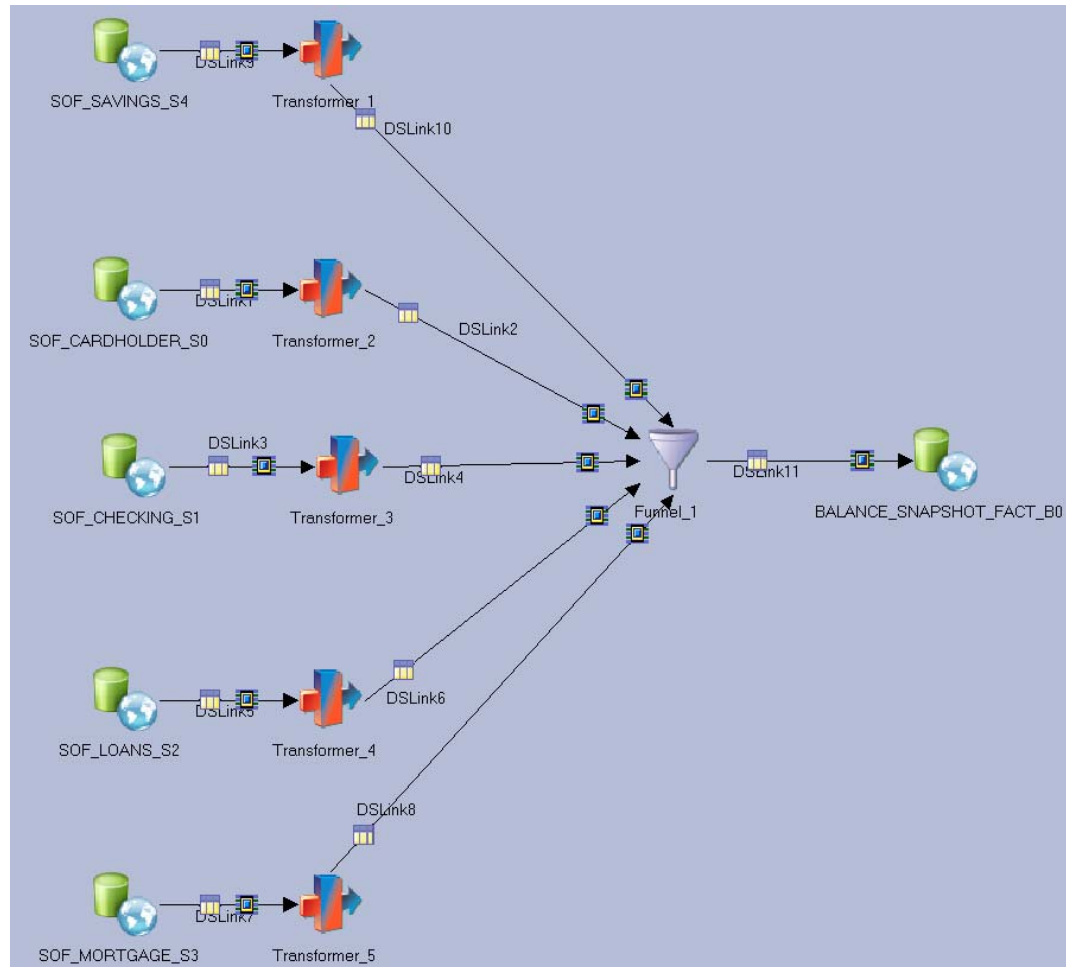
IBM Leads In Data Integration

- Only InfoSphere Information Server delivers unified metadata across all tools for collaboration and reuse
  - ▶ Oracle has no integration of metadata across products
  - ▶ Manual import/export required

- Model-driven design with FastTrack and DataStage speeds development
  - ▶ Oracle has no tools to help manage source to target mappings

- InfoSphere Information Server works in heterogeneous environments
  - ▶ InfoSphere gathers, processes, and cleanses more data from more sources than Oracle

"FastTrack enables our analysts to capture more complete business requirements. The ability to translate this information directly into DataStage jobs with up to 70 percent of the code completed will significantly shorten our development lifecycle."

   - Roderich Hofmann, project manager, WAVE, IT-Solutions provider of Bank Austria and member of UniCredit Group

Using New Intelligence Creates New Business Opportunities

If we can identify our risky mortgage assets, we can work to remove them from our books

We can identify risky mortgage customers by watching their activities in other business areas
- ▶ Bounced Checks
- ▶ Missed Credit Card Payments
- ▶ Missed loan payments
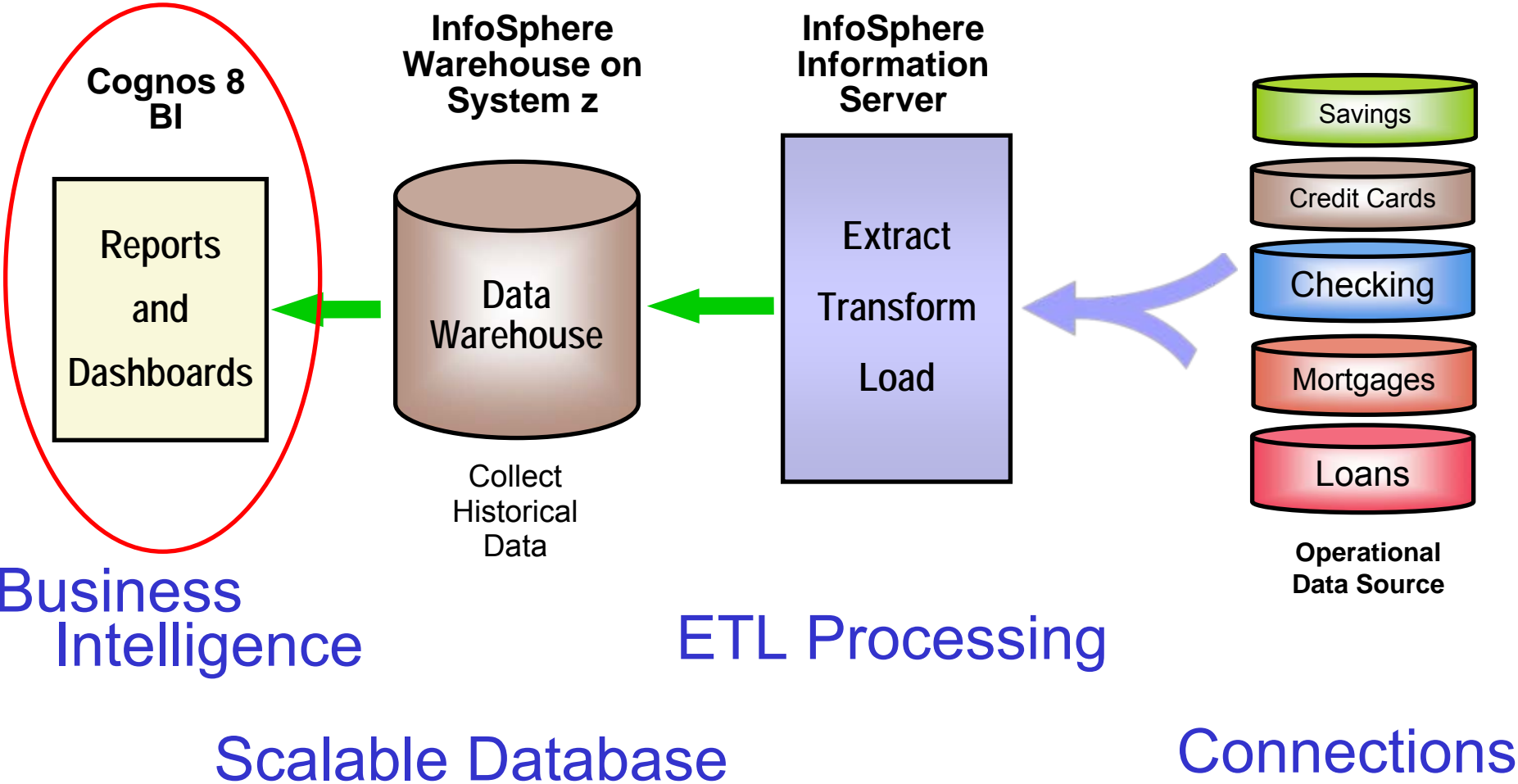
Service Oriented Finance CEO

Mortgage Line of Business VP

Create New Intelligence With IBM Cognos

Now that you have a data warehouse, you can create this new intelligence using IBM Cognos 8 BI

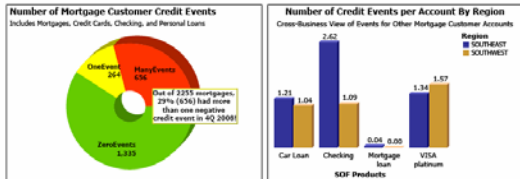**IBM**

Use IBM Cognos 8 BI To Optimize Business Decisions

Cognos 8 BI

Reports and Dashboards

InfoSphere Warehouse on System z

Data Warehouse

Collect Historical Data

InfoSphere Information Server

Extract Transform Load

Savings

Credit Cards

Checking

Mortgages

Loans

Operational Data Source

Business Intelligence

ETL Processing

Scalable Database

Connections

DEMO: Identify Risky Mortgage Accounts Using Cognos 8 BI

1. Show report generated in Cognos Report Studio in PDF format

2. Report identifies high-risk mortgages by looking at negative credit events in customers other SOF accounts (CC, Checking, etc…)

3. Report uses both structured and unstructured data (link to mortgage data stored in FileNet)

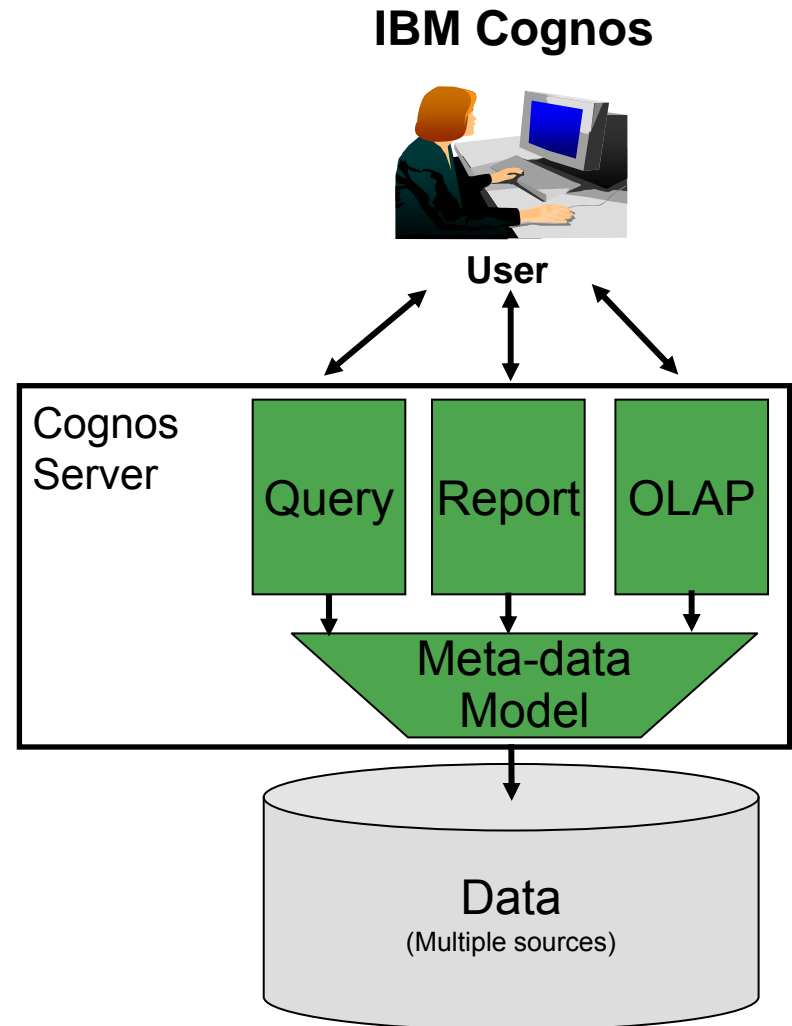> **That report is just what we need!**

**Mortgage
Line of Business VP**

- At risk customers are identified and contacted to refinance
- Risky mortgages can be sold

IBM Cognos Is An Integrated Platform Built On SOA

- Implemented in Java, runs on WebSphere

- 100% browser based access
  - ▶ Server side business intelligence
  - ▶ Users can access new intelligence from anywhere

- Easiest for IT to deploy and manage
  - ▶ Scales up and out across heterogeneous hardware and operating systems
  - ▶ Unified security
  - ▶ Unified administration

- Consistent user interface across tooling
  - ▶ Greater user satisfaction and increased business agility with lower IT costs

- Common meta data model
  - ▶ Author new intelligence assets once, consume anywhere
  - ▶ Common view enables open data strategy
  - ▶ Supports Unicode and multilingual features without recreating reports

IBM Cognos

User

Cognos Server

| Query | Report | OLAP |

Meta-data Model

Data
(Multiple sources)

■ IBM Cognos

Users Can Create The Reports They Need Using Cognos 8 BI

- Query Studio is an easy to learn self-service reporting tool requiring minimal reporting knowledge
  - ▶ Helps alleviate report authoring backlog
  - ▶ Use existing self-service reports to create a new report
  - ▶ Modify the style and layout of self-service reports

- Report Studio is a professional reporting tool to create any style of report
  - ▶ Invoices, financial statements, inventory, payroll, etc
  - ▶ Provides "pixel-perfect" formatting with absolute control over visual layout
  - ▶ Library of lists, crosstabs, charts, maps, operators, constants, functions, filters, more

Reuse Trusted New Intelligence Assets Across the Cognos 8 Platform
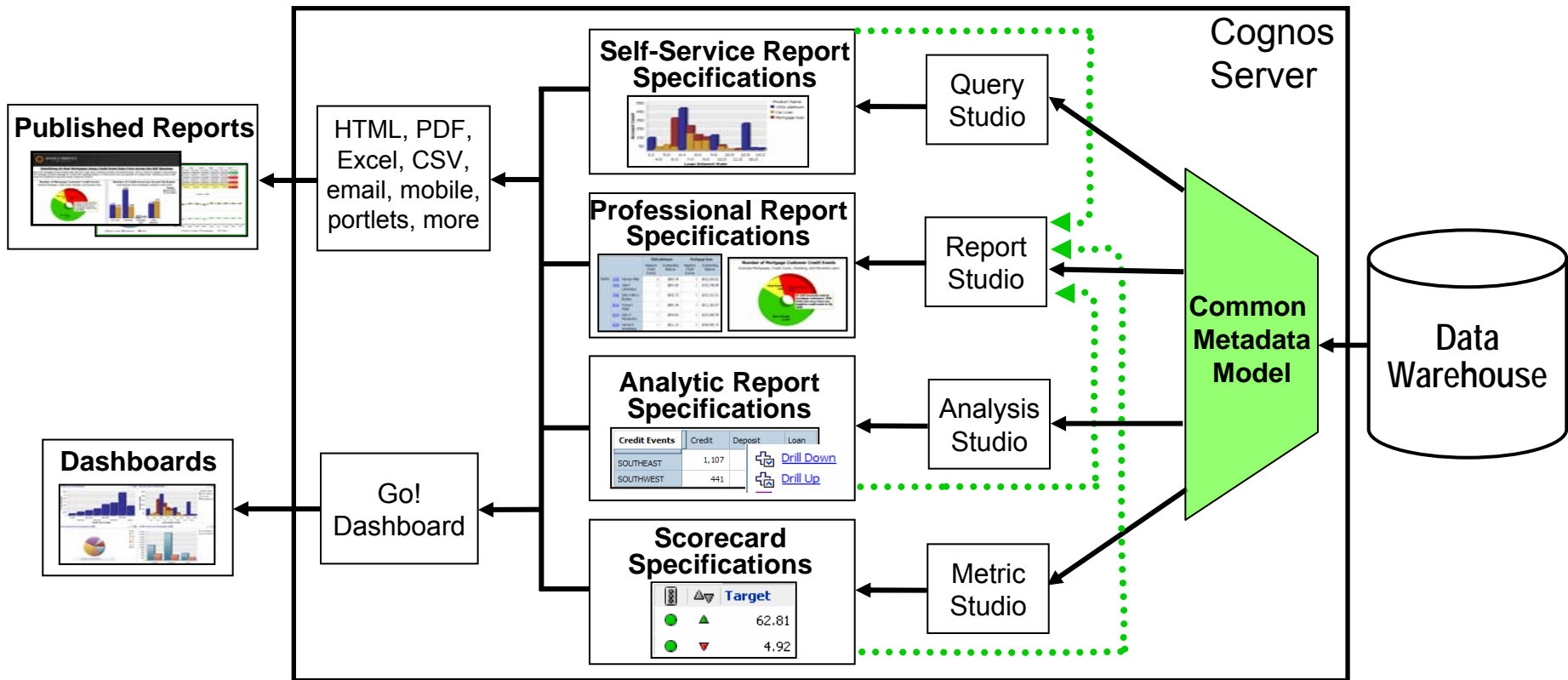
- **All new intelligence assets share a common metadata model and common report specification**
- **Author Once – Consume Anywhere**
- **Ensures consistent information and enables reuse across platform functions**

- **Oracle has multiple metadata models depending on source type**
- **Oracle has multiple different report formats**
- **Oracle cannot reuse assets between tools**

Include Any Data Source In Your New Intelligence With the Cognos 8 Platform
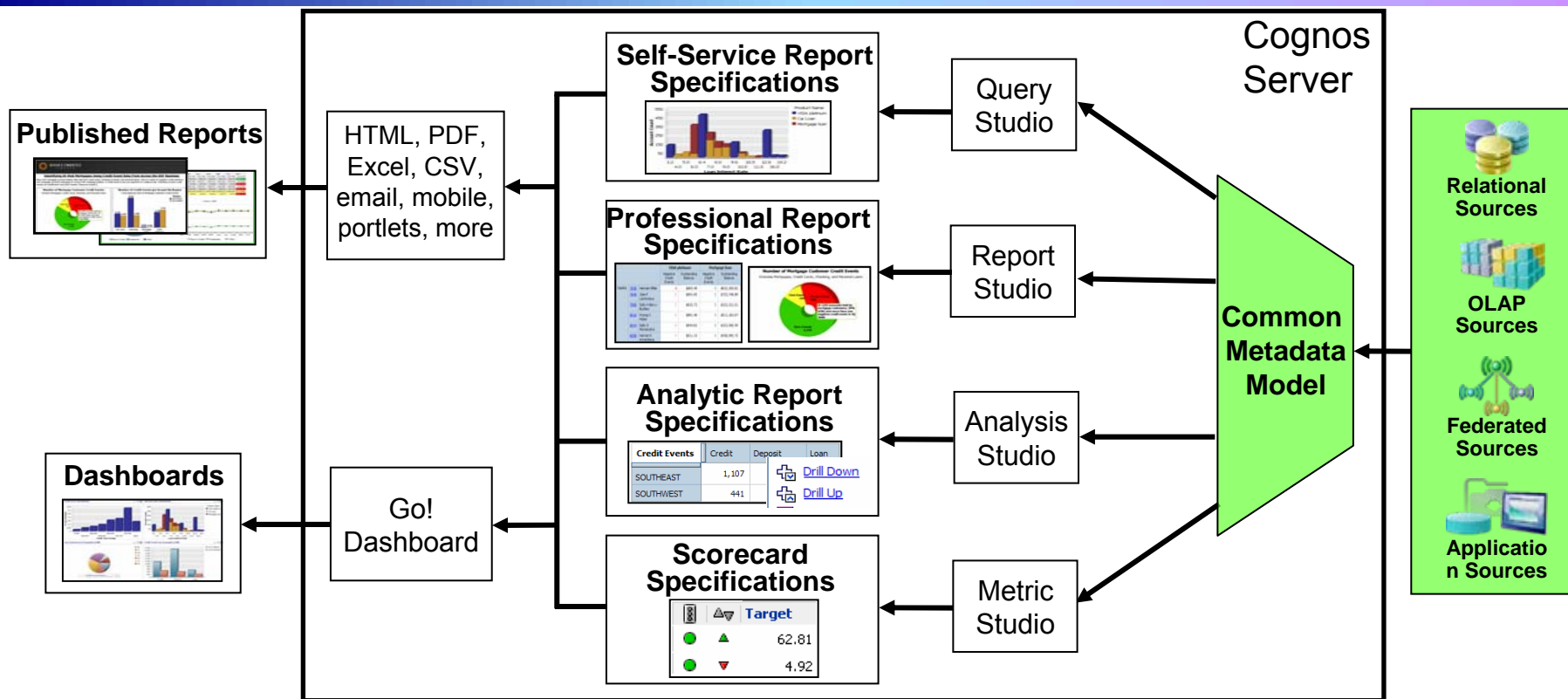
- **Open data strategy enables a common view across a variety of data sources**
- **Support for application data sources such as SAP ERP**
- **Combine relational, OLAP, federated, and other data sources in any tool**

- **All capabilities access a trusted set of information defined in the common metadata model**
- **As sources change, metadata model can control and identify impacts to report specifications**

Cognos Go! Dashboard Enables You To Monitor Business Operations

- Cognos report specifications can be incorporated into dashboards using Cognos 8 Go! Dashboards

- What goes into a dashboard?
  - Self service reports
  - Professional reports
  - Analytical reports
  - Scorecards
  - RSS feeds, HTML, search, more

- Users can create their own dashboards from existing Cognos report assets

- Everything you need to monitor a particular aspect of the business

- Information from several different subjects areas presented at the same time

- Provides dynamic and visually appealing capabilities by using Adobe Flash
  - Everything runs in a browser – only Adobe Flash is required
  - Easily change chart types and color palettes
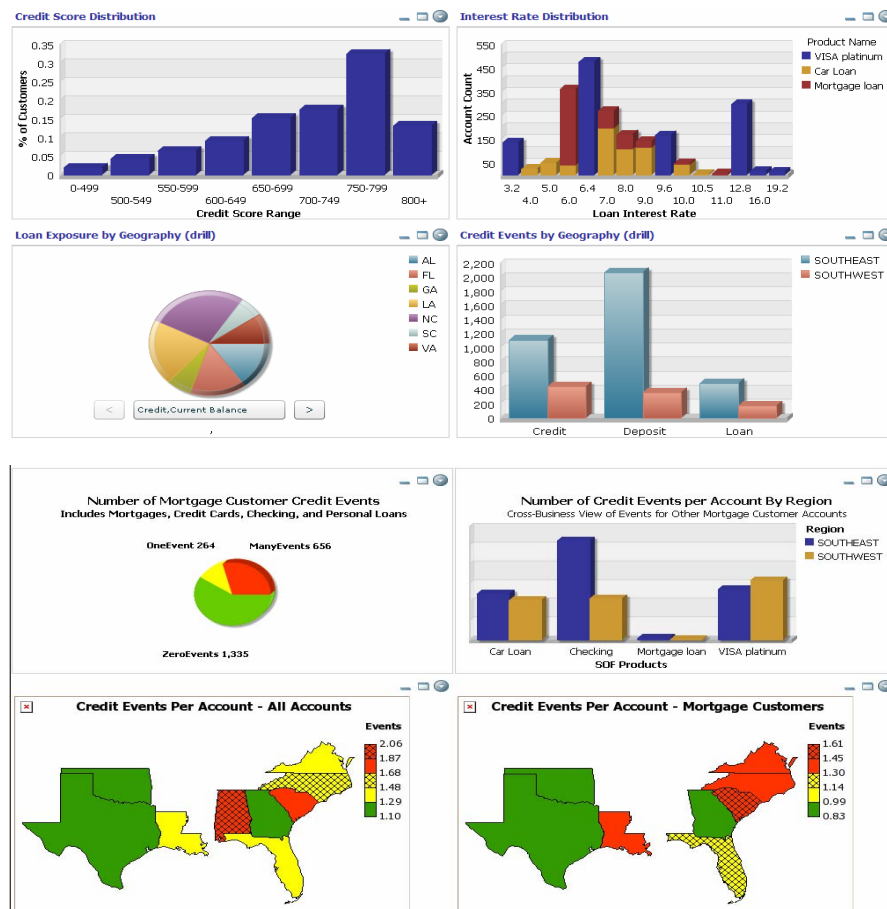
DEMO: Gain Business Insight Through IBM Cognos 8 BI

- **Use Go! Dashboard to quickly monitor the business operations**
- **Use Cognos Query Studio to customize an existing report**
- **Open Cognos Report Studio and add a chart to the report**
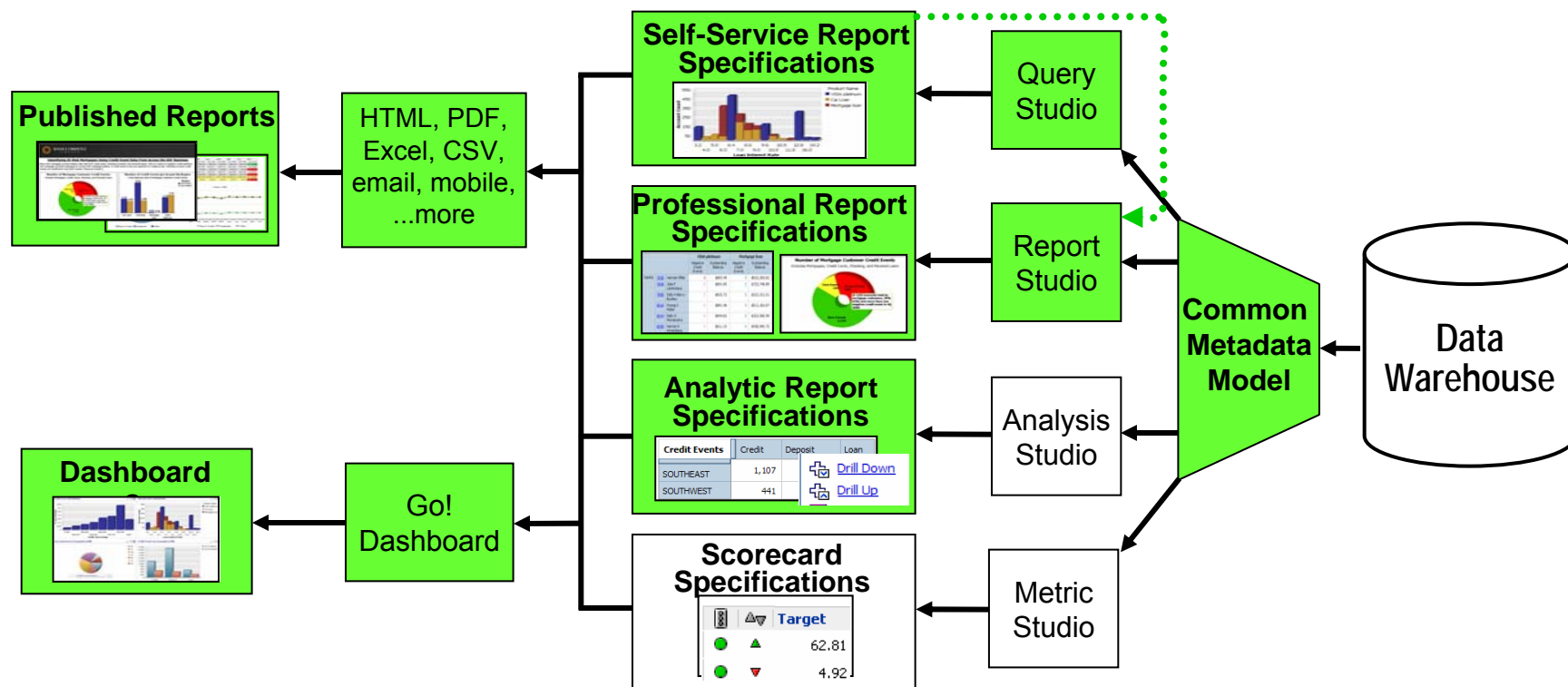
Oracle Business Intelligence Enterprise Edition Is A Complicated Bundle
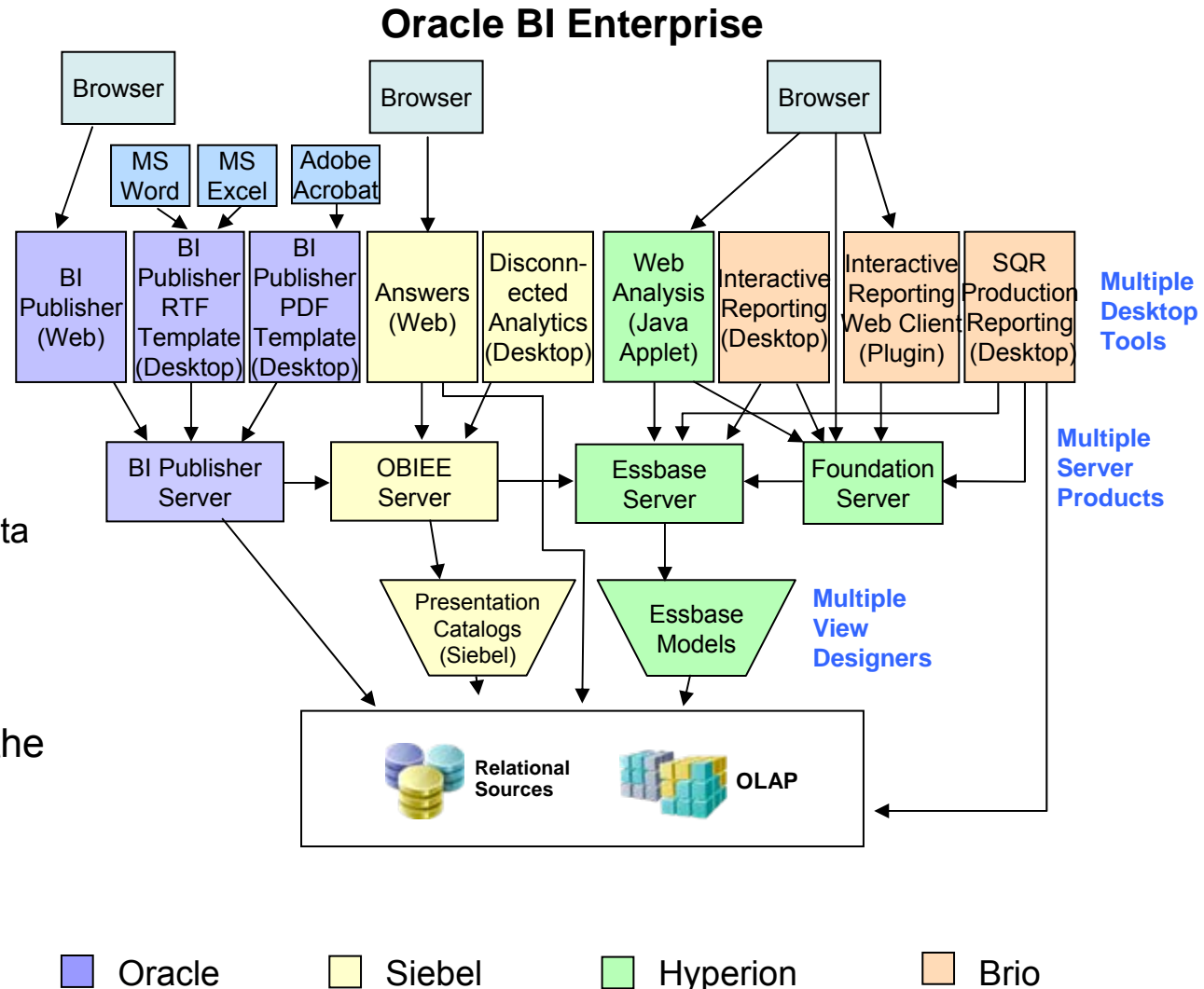
- **Too Many Products!**

- **Multiple Desktop Client Tools**
  - ▶ Multiple report formats
  - ▶ Multiple metadata models
  - ▶ Creates More work
  - ▶ Report specifications cannot be shared or reused easily
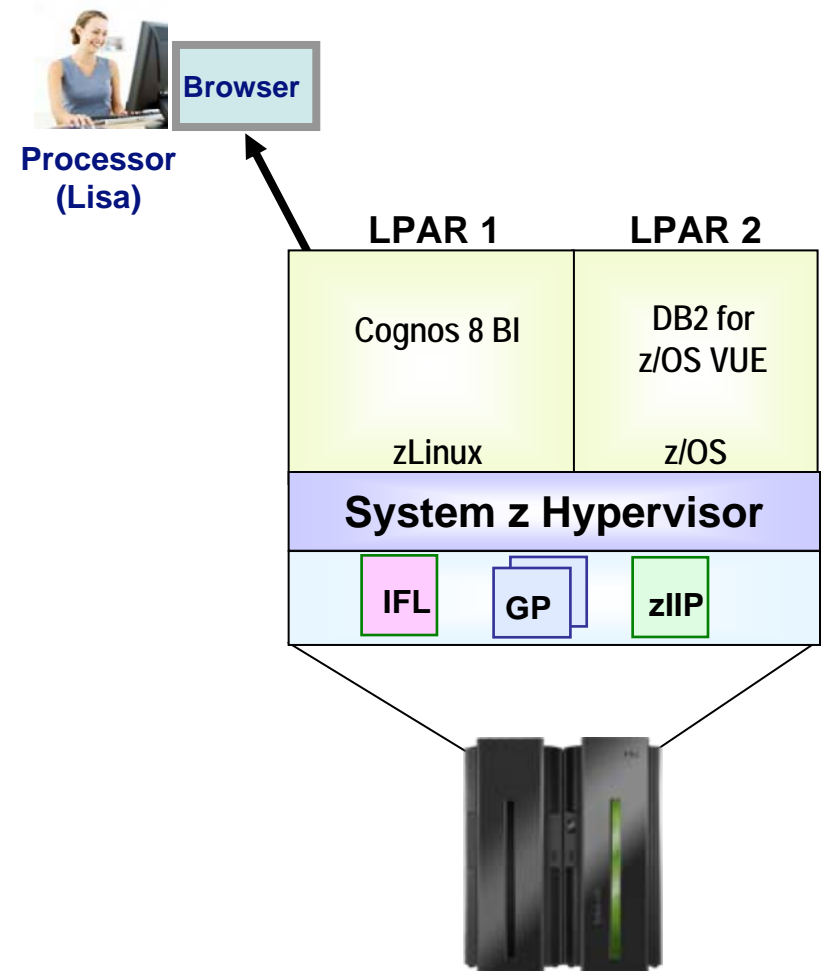   - – No common meta data model

- **Creates IT Burden**
  - ▶ Install, Patch, User Support all happen at the desktop

Oracle BI Enterprise

```
Browser          Browser                    Browser

  MS    MS   Adobe
  Word  Excel Acrobat

  BI    BI        BI                              Web     Interactive  Interactive  SQR
Publisher Publisher Publisher  Answers  Disconn-  Analysis  Reporting   Reporting   Production
 (Web)    RTF      PDF        (Web)    ected    (Java    (Desktop)   Web Client   Reporting
        Template  Template            Analytics Applet)              (Plugin)    (Desktop)
        (Desktop) (Desktop)           (Desktop)
```

Multiple Desktop Tools

Multiple Server Products

```
  BI Publisher      OBIEE      Essbase      Foundation
    Server          Server      Server        Server

                 Presentation   Essbase
                  Catalogs      Models
                  (Siebel)
```

Multiple View Designers

Relational Sources   OLAP

| ▢ Oracle | ▢ Siebel | ▢ Hyperion | ▢ Brio |

IBM Proof Of Concept To Demonstrate Data Warehouse Scalability

- **Enterprise Data Warehouse**
  - ▶ 50 TB Raw Data
  - ▶ 300 BILLION row table

- **Hardware-assisted compression for data and indexes**
  - ▶ Up to 63% savings on data
  - ▶ Up to 61% savings on indexes

- **System z TCO exploits**
  - ▶ zIIPs
  - ▶ IFLs
  - ▶ ICFs

- **Best of Breed virtualization**

- **Best of Breed QoS**

Processor (Lisa)

Browser

LPAR 1	LPAR 2
Cognos 8 BI	DB2 for z/OS VUE
zLinux	z/OS

System z Hypervisor

IFL   GP   zIIP

Case Study: Deploy New 10TB Data Warehouse On z/OS With Disaster Recovery (Cognos Base Function)
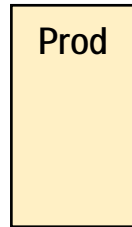
Existing Mainframe

Existing Disaster Recovery Site

Add 1 LPAR for New Data Warehouse w 3.8 TB Storage

And add Disaster Recovery w 3.8 TB Storage

Prod

2,184 MIPS additional workload on z/OS and 1,840 MIPS on zLinux

Prod

3 year cost of acquisition $5.71M

Existing z10:
2 GP 1,720 MIPS
DB2 and utilities
With 20Tb storage

Existing:
1 GP processor for hot disaster switch-over
1 "dark" DR processor
With 20Tb storage

Incremental:
2 GP   1,310 MIPS (60%) DB2 & Utilities
1 zIIP   874 MIPS (40%) DB2
1 IFL   920 MIPS DataStage
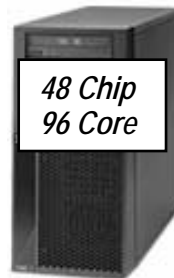1 IFL   920 MIPS Cognos
Add 10 GB memory
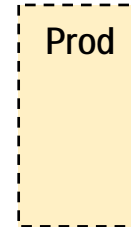
Capacity Backup:
2 GP
1 zIIP
2 IFLs

Or add HP Integrity Superdome sx2k 9150N Server w 7.3 TB storage

Prod

And add Disaster Recovery W 7.3 TB storage

Prod

48 Chip 96 Core

48 Chip 96 Core
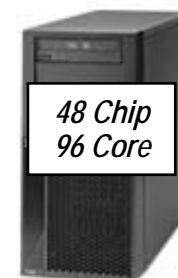
3 year cost of acquisition $24.98M

350,299* Performance Units

350,299* Performance Units

*Production Performance Units required = (2,184+1840) MIPS x 87 = 350,088

System z Provides A Comprehensive BI Solution
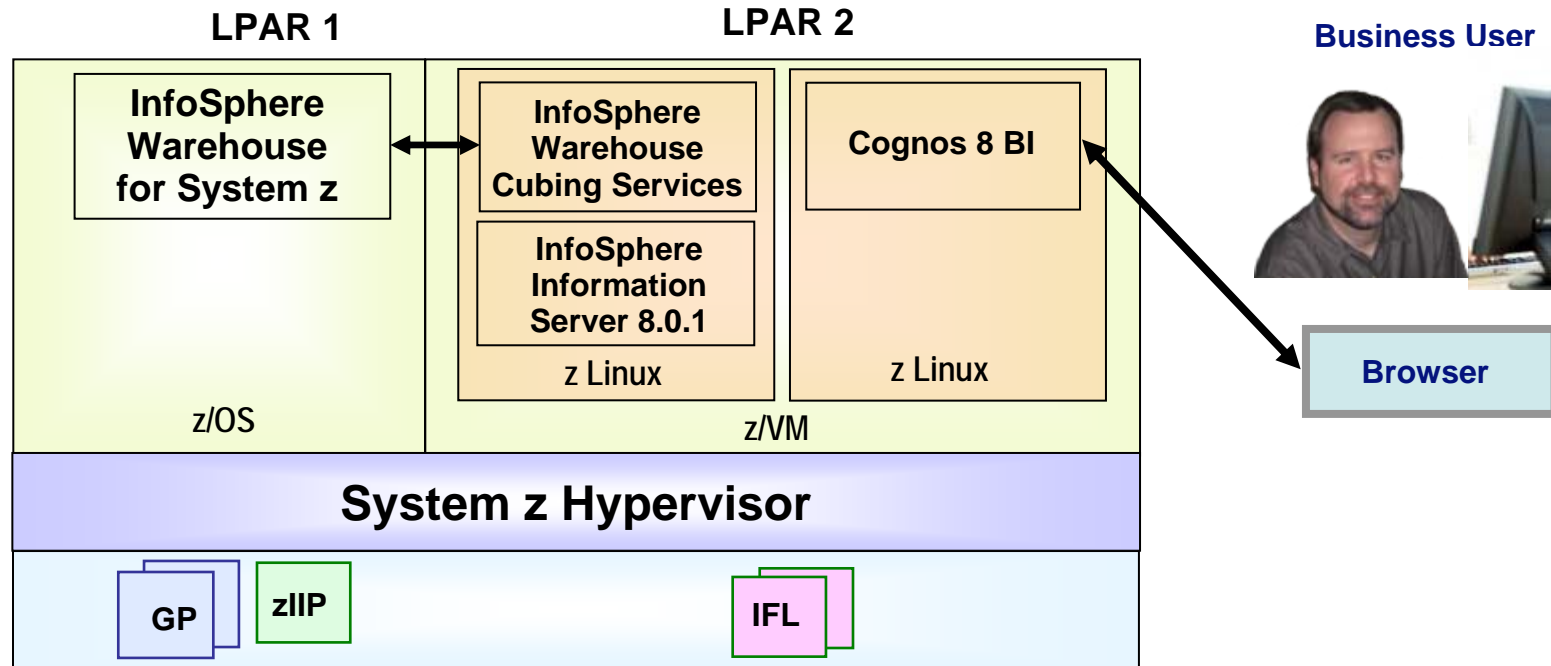
System z Offerings for Enterprise Data Warehouse and BI:

- InfoSphere Warehouse for System z
- InfoSphere Information Server for System z
- IBM Cognos 8 BI for System z
- Only IBM can provide an end to end Platform DW and BI Solution

IBM vs. Oracle Business Optimization

	IBM	Oracle
Extensive Enterprise Connectivity	**InfoSphere Information Server**	**Oracle-focused**
Enterprise Scalability	**InfoSphere Information Server**	**Waiting for Fusion**
Integrated, Comprehensive Performance Management Platform	**IBM Cognos**	**NO** Multiple products (Oracle, Hyperion, Siebel) with different metadata models
Common metadata model	**IBM Cognos**	**NO** Multiple separate metadata strategies
100% web-based zero footprint BI	**IBM Cognos**	**NO** BI Publisher uses MS Word, Many BI functions require desktop apps and plug-ins