



CAS Seminar on Ratemaking

TEC-2: Think Big, Start Small *Building a Data Warehouse with Limited Resources*

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Teradata
a division of  NCR

Agenda

You've never seen your business like this before.

- Teradata & DW in Insurance
- Actuarial Applications, Issues & Implications
- The Enterprise Data Warehouse
- Data Mart Consolidation for Funding
- EDW Roadmap Visual Model



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Teradata Insurance Data Warehousing Experience

Teradata Insurance & Healthcare Differentiators

You've never seen your business like this before.

- Over 15 years old
- Built 60+ Insurance & HC data warehouses
- Leading insurance and healthcare industry customers
- Integrated industry solution portfolio built upon Financial Services Logical Data Model (LDM)
- Patented cross industry FS-LDM (Insurance, Healthcare, Banking & Securities)
- Business driven DW Solution Methodology
 - Business Discovery & Business Value Assessment
- Business Impact Opportunities (BIO) Analytic Framework
- Business Impact Models (BIMs) for ROI/business case
- Industry Consultants
- Data Warehousing professional services staff
- Industry specific METIS Visual Models

Teradata's Presence in Insurance & Healthcare

You've never seen your business like this before.

Largest U.S. Disability Writer
> UNUMProvident

Three of the top five BC/BS Plans
> Anthem, HCSC, Highmark

Second Largest Health Insurer in Switzerland
> CSS Versicherung

Four of the top ten US P&C Carriers

> Nationwide, CNA, Liberty Mutual, Hartford

Largest AAA Affiliated Insurance Plan
> Auto Club of S. California

Largest US Hospital Management Company
> HCA – The Healthcare Company

Third largest German Health Insurer
> BKK – Bundesverband der Betriebskrankenkassen

Four of the top twelve Carriers in South Korea
> Samsung, Hyundai, Dongbu, Shindongah

Teradata Insurance Solutions Framework

You've never seen your business like this before.

measurement infrastructure

- Profitability Analysis
- Communication Manager (Integrated)

analytical infrastructure

analysis

- *Exploratory*
 - Teradata Analytic Product View
 - Teradata Analytic Transaction View
 - Clickstream Analysis/ Web Analytics
 - Report Workbench
- **Actionable**
 - Segmentation
 - Customer Behavior
 - Product/Affinity
 - Percentile
 - Cross-Segment
 - Percentile Profiling
 - Pattern Detection

modeling

- Response Modeling
- Profitability Modeling

communication management infrastructure

personalization

- Personalization Templates
- Personalization Rules

communication

- Communication Manager
- Event Discovery
- Event Agent
- Enterprise Rules

optimization

- Communication Director

interaction

- Web
- Call Center
- Email

data management infrastructure

- Teradata Warehouse
- WorldMark Servers
- Logical Data Model
- Teradata Miner
- OLAP Infrastructure
- Teradata Utilities



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Actuarial Applications, Issues & Implications

Current Actuarial Approach & Issues

You've never seen your business like this before.

Traditional Approach

- SAS extracts
- Access Database
- Excel Spreadsheets

Why

- Aggregation
- Flexibility
- Control

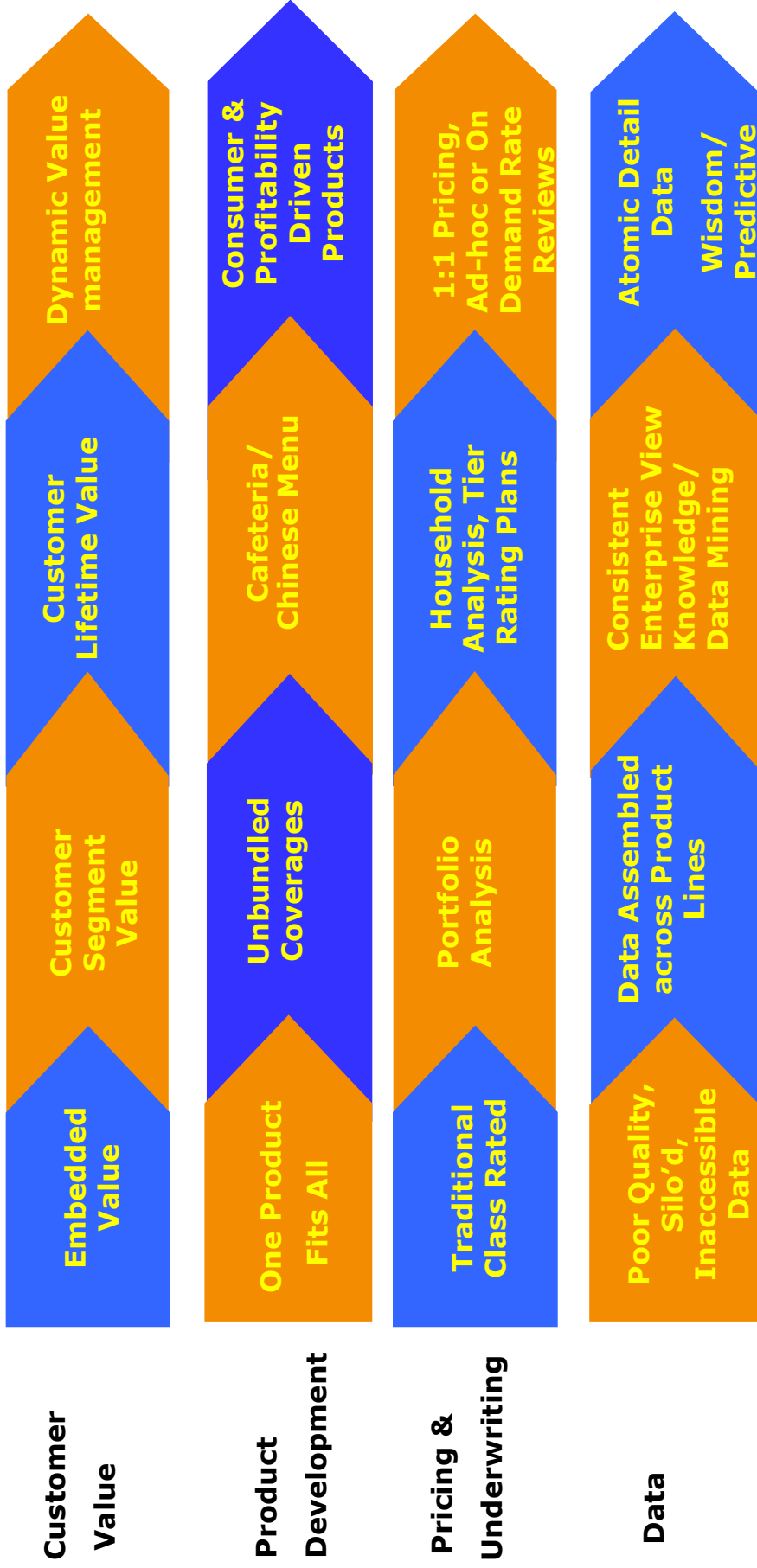
Issues

- Costly
- Data Integrity
- Spend 80% of time obtaining the data vs. analyzing it
- Analytic contention with operational systems

The sponsor of a DW in insurance is often the Chief Actuary or the CFO.

The Actuarial Evolution

You've never seen your business like this before.



How much of your time is spent accessing or validating data Vs. analyzing it?

Best Practices

You've never seen your business like this before.

- Moving toward an Enterprise Data Warehouse -- a DW for each major SBU, e.g., Life Vs. P&C
- Data Governance process/Metadata repository
- Granular/atomic Vs. summary data
- Increased use of sophisticated data mining techniques
- Still use SAS but not for extraction
- Still use Excel for small data sets
- Storing derived scores/factors in data warehouse for leverage by other users
- Common data set enables analysis integrated analysis across underwriting, pricing, marketing and claims, et al.

Case Study: Integrated Product, Premium & Loss Data

You've never seen your business like this before.

- Auto product policy, premium and loss data
- Actuarial pricing analysis
- Power users in actuarial pricing area
- Additional users include Claims, Underwriting & Product Management
- **Benefits**
 - Reduced **Time to Market** (from 12 months to 90 days)
 - Increased **Productivity** in report production/analysis (reduced from 2-6 months to 1 day)
 - Improved **Data Quality** (20% 'dirty data')
 - Prevented **Adverse Risk Selection**
 - Implemented **Underwriting Guidelines**

Case Study: Integrated Premium, Loss, Producer & 3rd Party Data

You've never seen your business like this before.

- Small Business portfolio analysis
- Premiums, Losses, Producer data, 3rd party data
- Power users in Actuarial & Market Research/Product Development
- Applications:
 - Ranked the **relative profit potential** of current customers and prospects
 - Book of business profiling on **Inforce Book**
 - Book of business profiling on **Transfer/M&A/Alliance** business
 - **Lead generation/acquisition** of new business
 - Catastrophe mappings
 - **Direct mail response and conversion** predictive modeling
 - **Producer analysis** for profitability and productivity

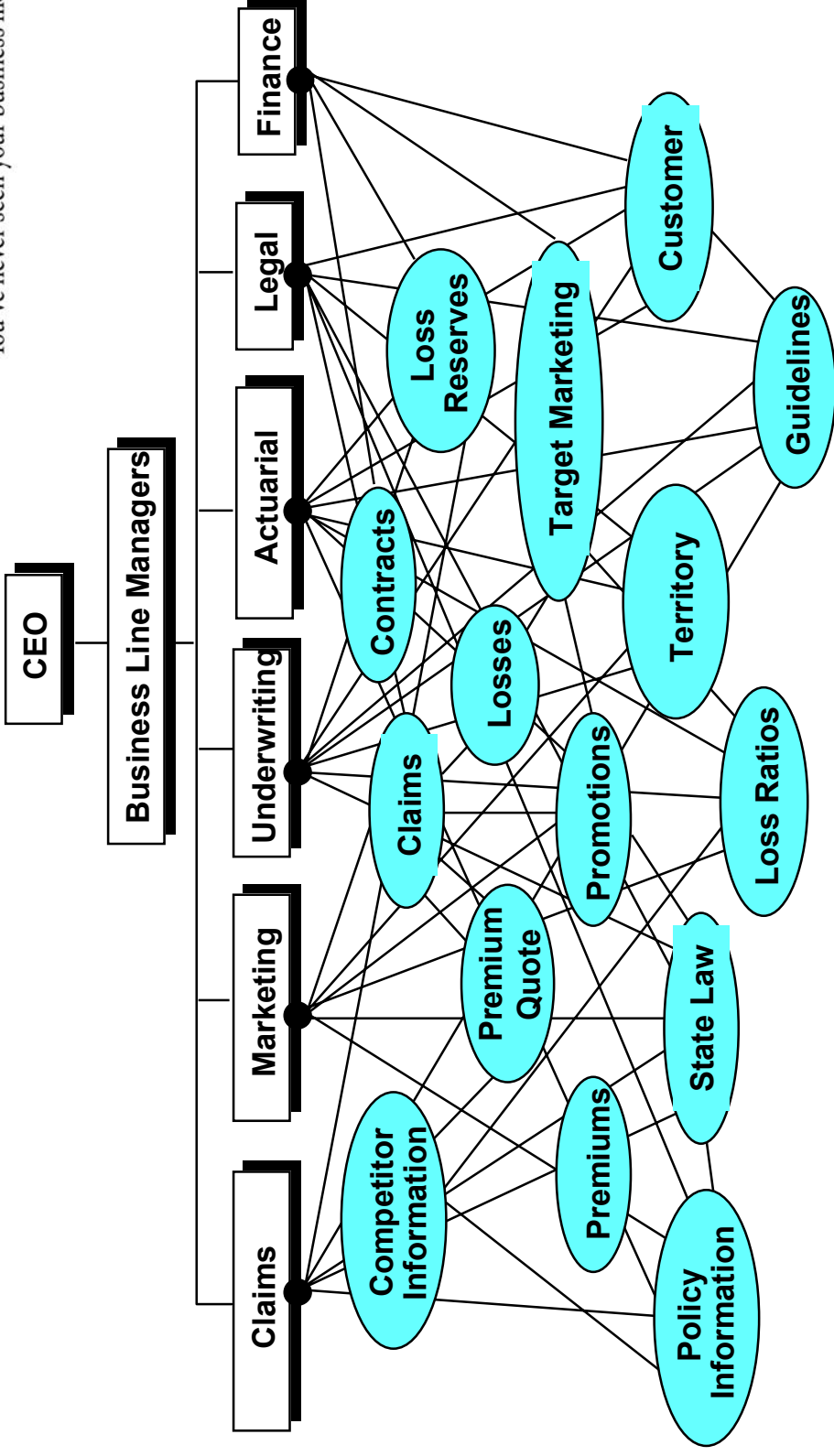


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The Enterprise Data Warehouse

Data Challenge: Multiple Data Sources

You've never seen your business like this before.



- Inconsistent, Inflexible Data
- Poor Response Time
- Misinterpretation of Data by Users

Data Solution: EDW

Single Source of the Truth

You've never seen your business like this before.

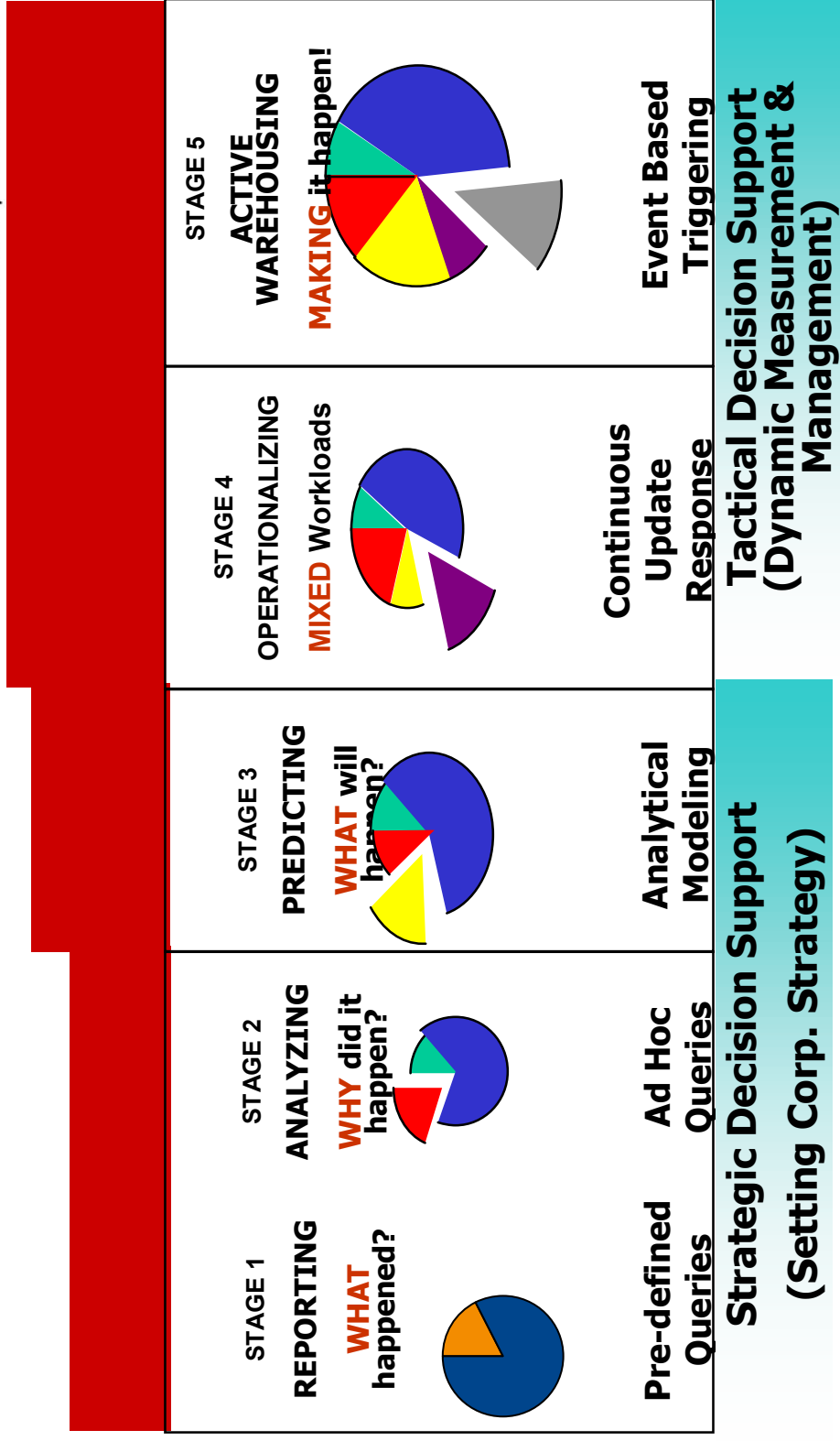


- Centralized Data Repository
- Single Version of the Truth
- Clean, Accurate Data
- Organized, Timely Availability
- Historical Detail
- Shared and Accessible
- Ad hoc Discovery & Analysis
- Flexibility
- Customer-centric Logical Data Model

**Don't build all at once;
build in iterations**

Data Warehousing Evolution: The Active Data Warehouse

You've never seen your business like this before.

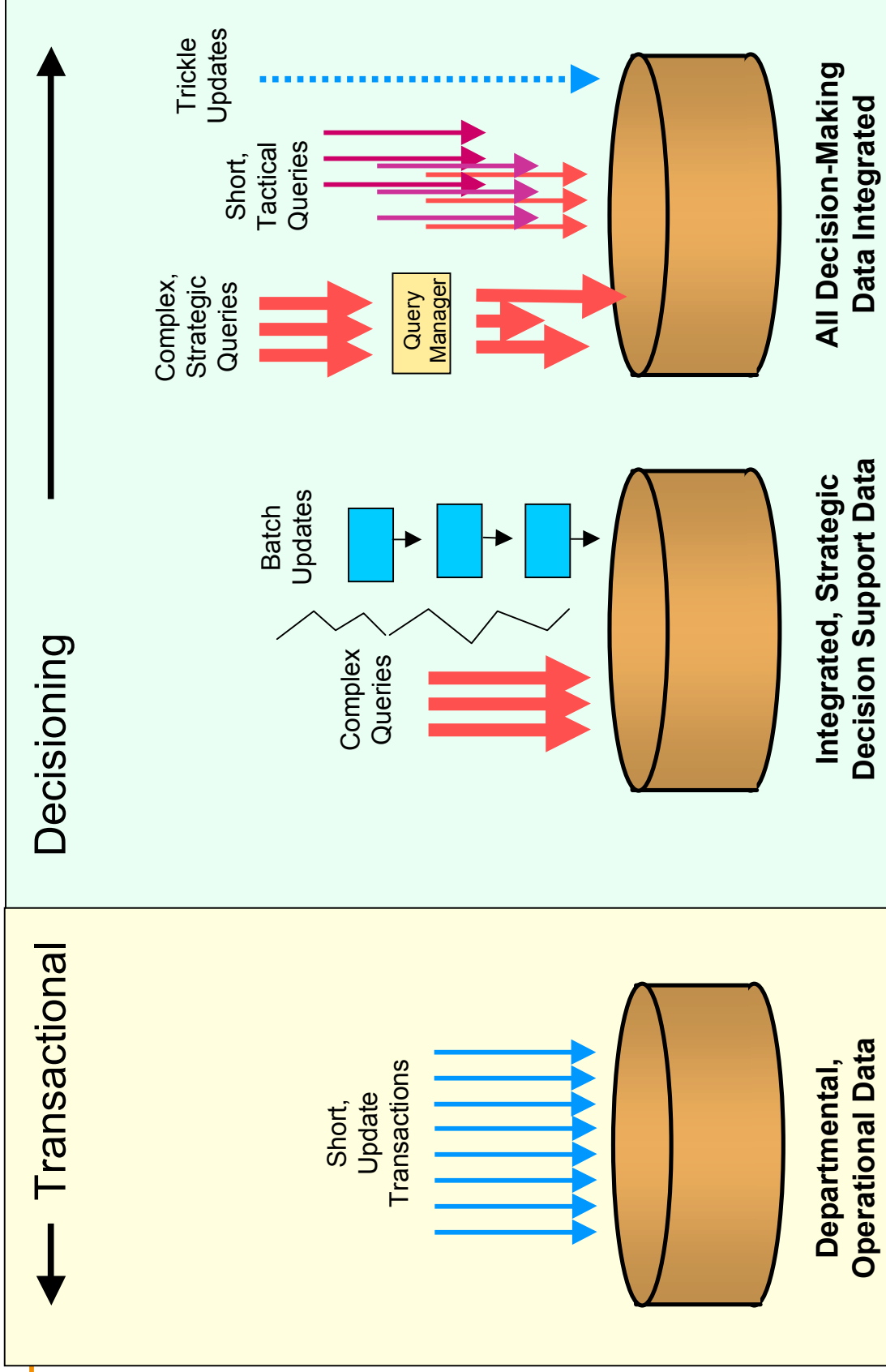


Return On Knowledge



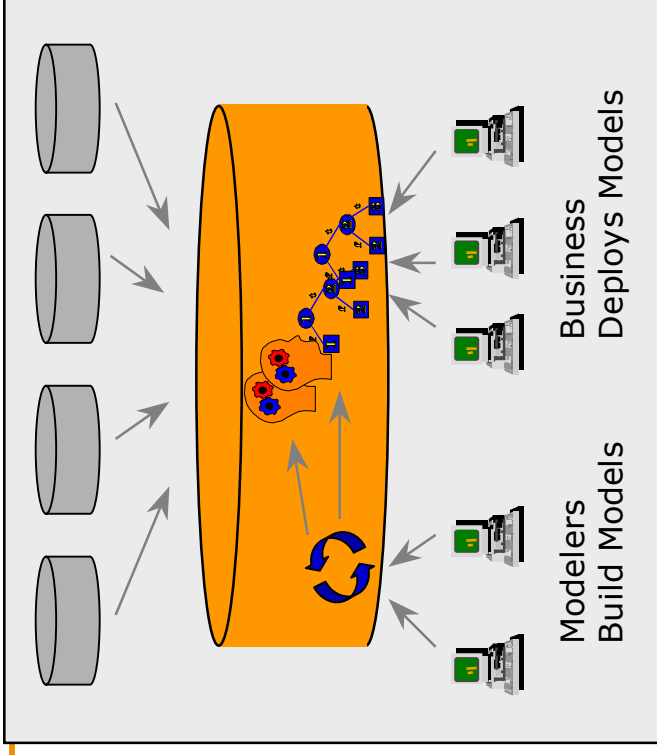
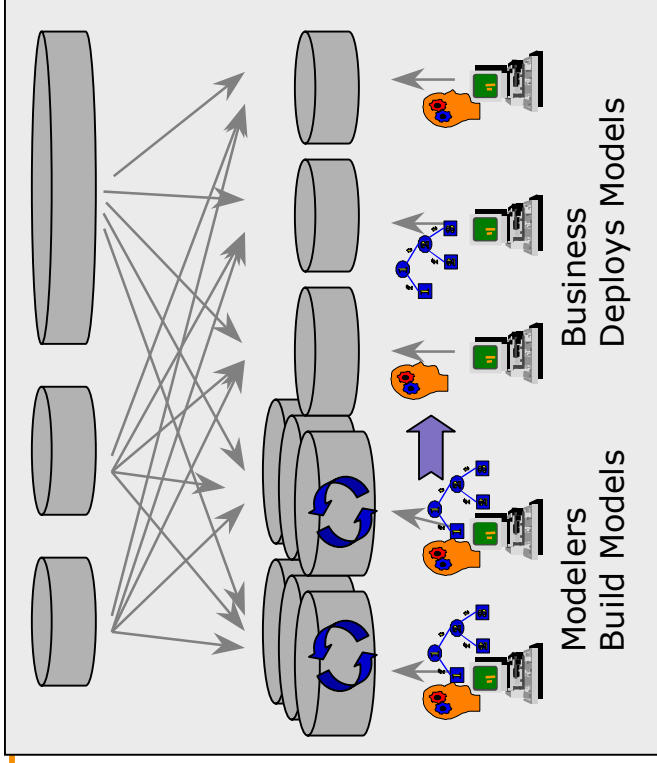
Trend:

OLTP versus Data Warehousing Mixed Workloads in the Data Warehouse



is before.

Trend: Centralized (In Warehouse) Data Mining



this before.

Distributed Data Mining

- Requires Immediate Sampling
- Requires Data Movement
- Redundancy/Metadata Issues

Centralized Data Mining

- Performance & Scalability
- No Data Movement
- Shared Metadata

**Less chance for data error!
Shift time from obtaining data to analyzing data.**

Data Warehouse Challenges

You've never seen your business like this before.

- Major impediments to creating data warehouses are **people/organizationally** related
- Next to the people/organization issue, **data quality** is the major challenge
- DW is an effort that neither IT organizations nor business communities are **comfortable with or proficient** at
- DW efforts often run significantly **over time and over budget**

Source: Conning & Co. DW & DM Study, 2000

As a result of these issues, companies often take a data mart approach!

Problems with Data Marts...

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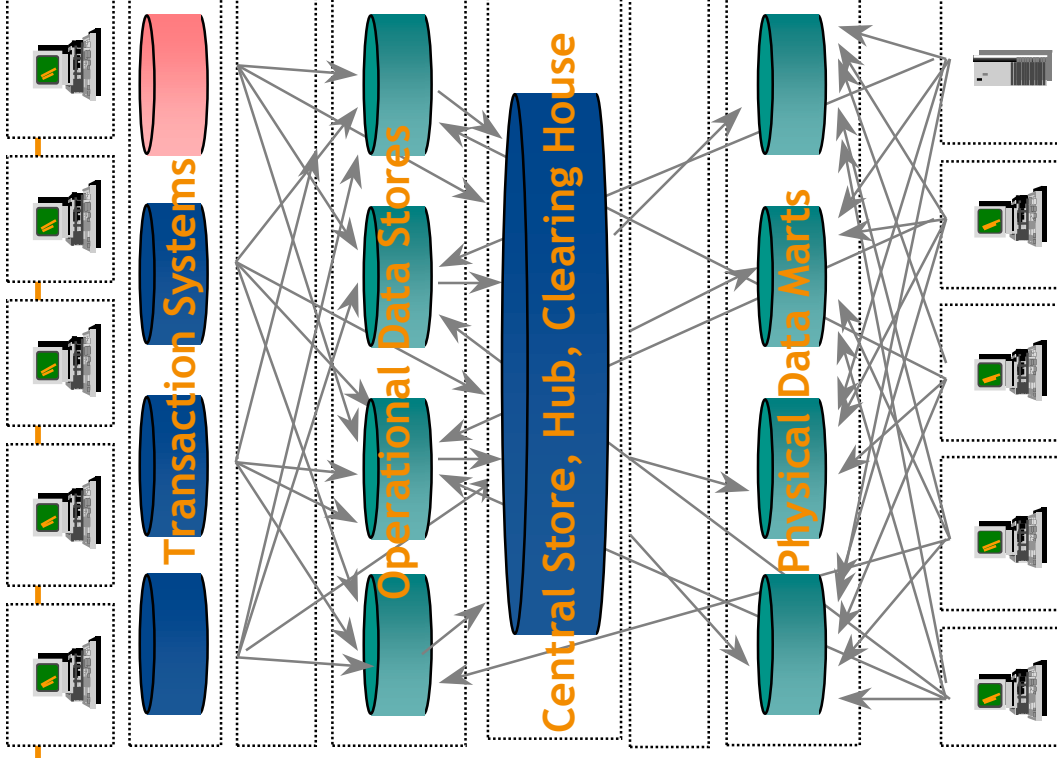
- **Data Mart-oriented or Federated DW architectures:**
 - Result in **failed projects** nearly 3X more often
 - Suffer **70% higher cost** per subject area
 - Yield increasingly **rising cost per subject area**

70% higher cost

META Group 1999 Data Warehouse
Scorecard and Cost of Ownership Study

Data Mart Environment The Terrible Toos --

You've never seen your business like this before.



1. Too many copies of the data
 - Will they all be the same?

2. Too much latency
 - Takes too long to get the data to the people who need it.
 - Everyone sees different inconsistent points in time

3. Too complex
 - Every line on the chart represents an ETL process that requires Life Cycle Maintenance

4. Too expensive
 - There are numerous components that lead to increased costs.
 - Costs often hidden in distributed organization.

Teradata Enterprise Data Warehouse Framework

You've never seen your business like this before.

Assemble

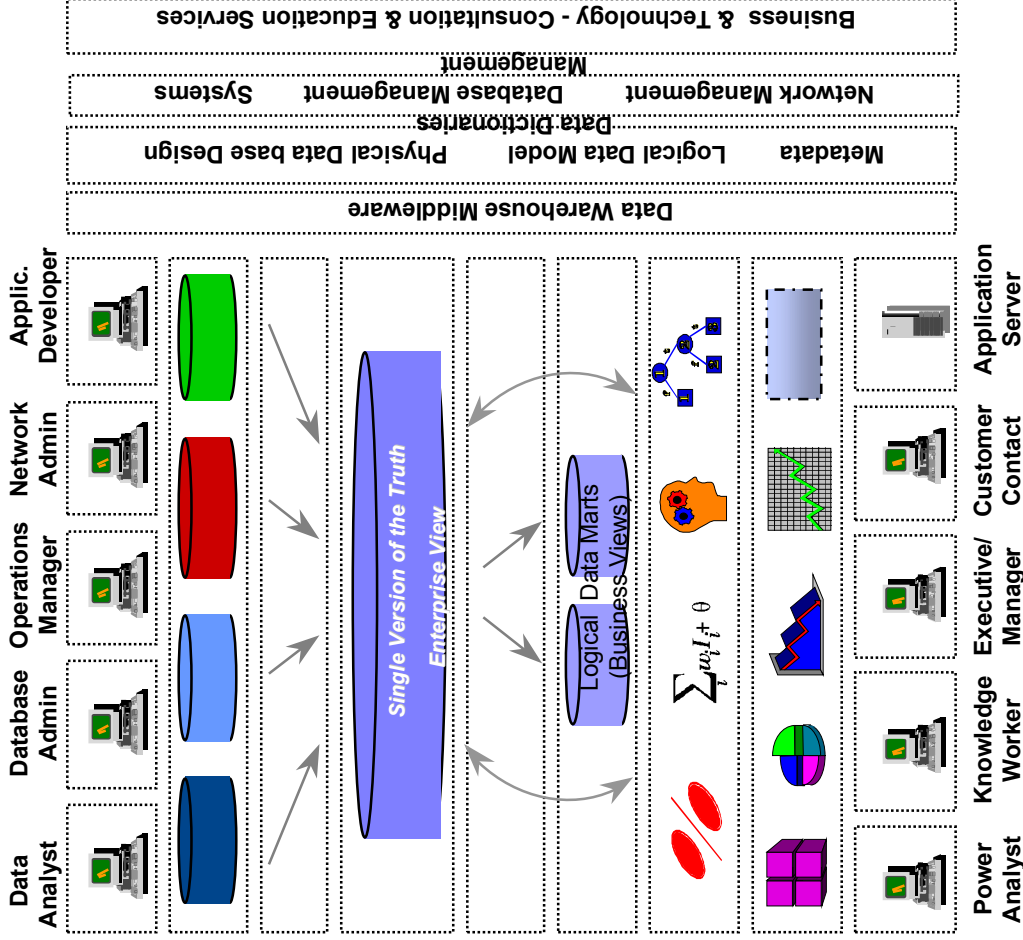
IT Users
 Source Data
 (Internal and/or External)
 Data Transformation

Manage

Enterprise Warehouse
 Replication & Propagation
 Dependent Data Mart

Answer

Knowledge Discovery / Data Mining
 Information Access / Applications
 Business Users



Keys to Data Warehouse Success

You've never seen your business like this before.

- **Specific business problem** to be solved
- **Executive Support**
- **Alignment** of business users and IT
- A well-defined **Plan**
 - **Short-term** deliverables
 - **Continual** enhancements
- Utilizing **proven Methods and Technology**
- **Experienced** personnel

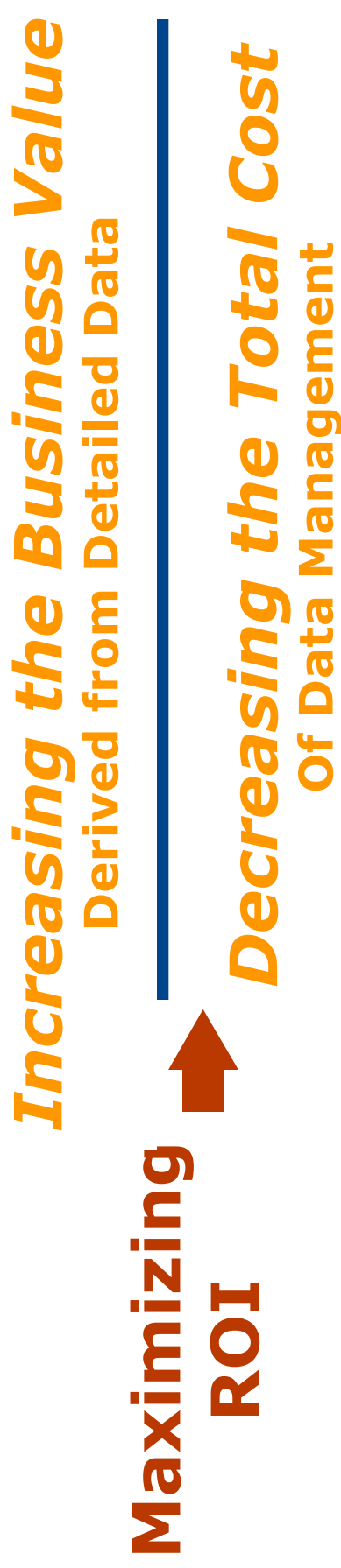


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Data Mart Consolidation: A Funding Vehicle

The EDW Value Proposition

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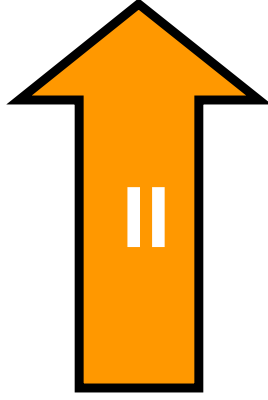
Business Improvement Opportunities (BIOs): Insurance

Key Business Processes	Business Improvement Opportunities (BIOs)					
Distribution Management	Channel Strategy Rationalization	Channel Usage, Preference & Profitability	Channel Management, Recruitment & Retention	Sales Reporting & Performance Analysis	Channel Communications	
Operations Management	New Business Processing	Utilization Analysis	Claims Analysis	Provider Network Management	Customer Service Management	
Risk Management	Reserves Analysis	Product Development & Pricing	Portfolio Analysis	Fraud and Abuse	Underwriting Risk Analysis	
Customer Management	Customer Communication Strategy	Cross-sell Up-sell	Product and Customer Alignment	Customer Retention	Customer Acquisition	
Financial Management	Profitability Analysis	Expense Analysis	Budget, Planning & Forecasting	Mergers & Acquisitions Analysis	Regulatory Compliance & reporting	
Data Management	Enterprise Data Architecture (DMC)	Data Quality & Stewardship	Privacy and Data Security	Business Continance	Accessibility and Performance	

Funding an EDW: Data Mart Consolidation

You've never seen your business like this before.

$$\sum \left[\begin{array}{l} \text{DM}_1 \\ \text{Support} \\ \text{Costs} \end{array} + \begin{array}{l} \text{DM}_2 \\ \text{Support} \\ \text{Costs} \end{array} + \begin{array}{l} \text{DM}_3 \\ \text{Support} \\ \text{Costs} \end{array} + \dots + \begin{array}{l} \text{DM}_n \\ \text{Support} \\ \text{Costs} \end{array} \right]$$



\$\$\$ Big Dollars

ROI from Data Mart Consolidation

You've never seen your business like this before.

**Consolidating 22 Data Marts
Timeframe = 8 Months
Started Mid November '01**

Cost to consolidate = **\$25 Million**
Savings within Same Period = **\$24 Million**

Support Costs:

\$9.0M per Quarter (22 Data Marts)

\$3.0M per Quarter (New Consolidated System)

\$6.0M Savings per Quarter

**56 More
Data Marts
Possible...**

**The FS-LDM accelerates the DMC!
Provides the Blueprint for how
to consolidate the data.**



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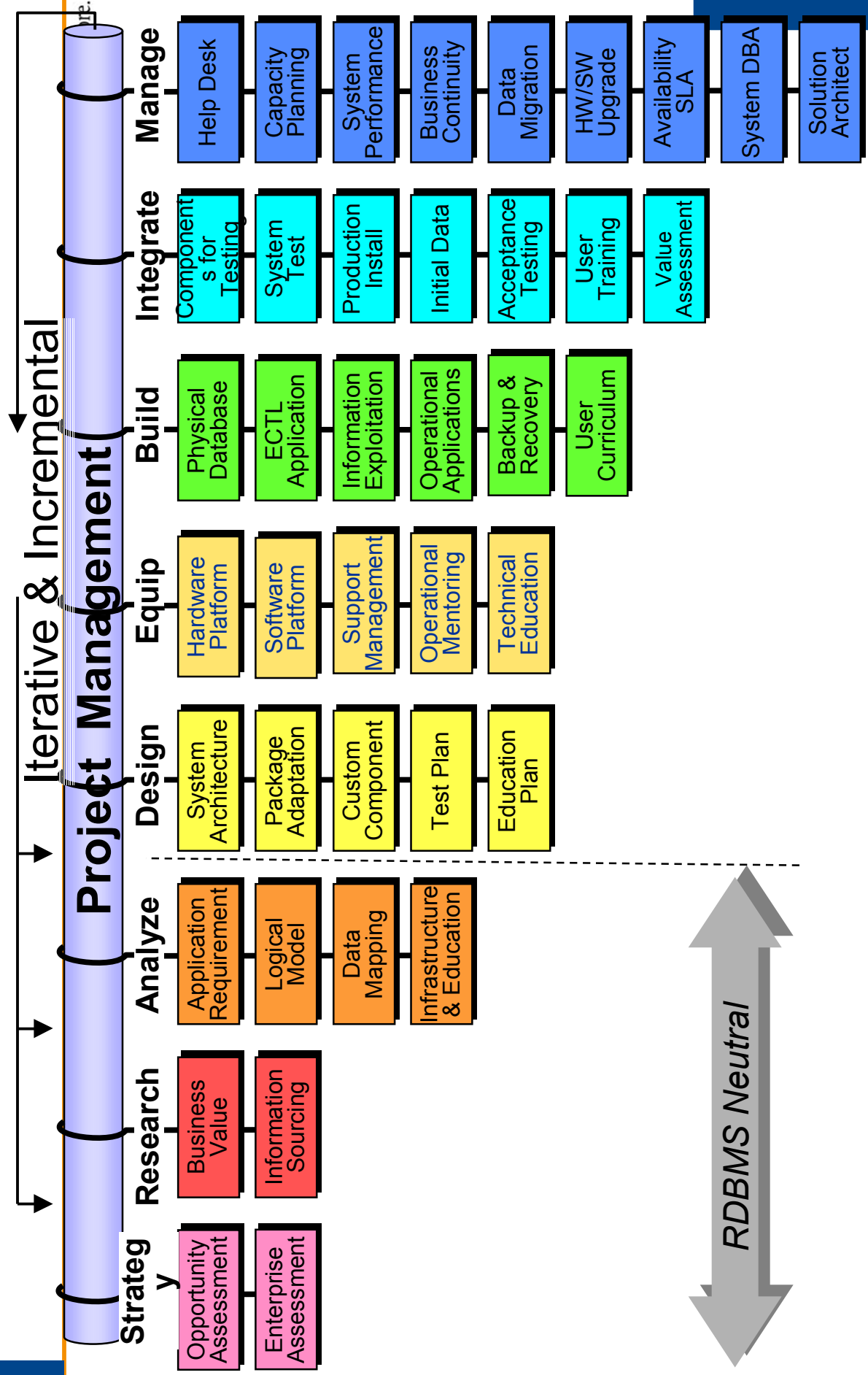
Getting There: The EDW Visual Roadmap

EDW Roadmap Model

You've never seen your business like this before.

- A **visual modeling tool** to plan the direction, priority and growth path for an EDW
- Ties together all of the key components of an EDW:
 - **Goals & Objectives** of the organization
 - The relevant **Business Improvement Opportunities (BIOs)** and/or initiatives
 - The data that an organization actually has
 - The **Business Questions** that can be answered...
... (and those that cannot!)
 - The **Key Performance Indicators (KPIs)**
 - The **Logical Data Model**
 - The **business value/ROI** potential
- Acts as a repository for the environment
 - **Communication** tool
 - **Planning** tool

Teradata Solutions Methodology



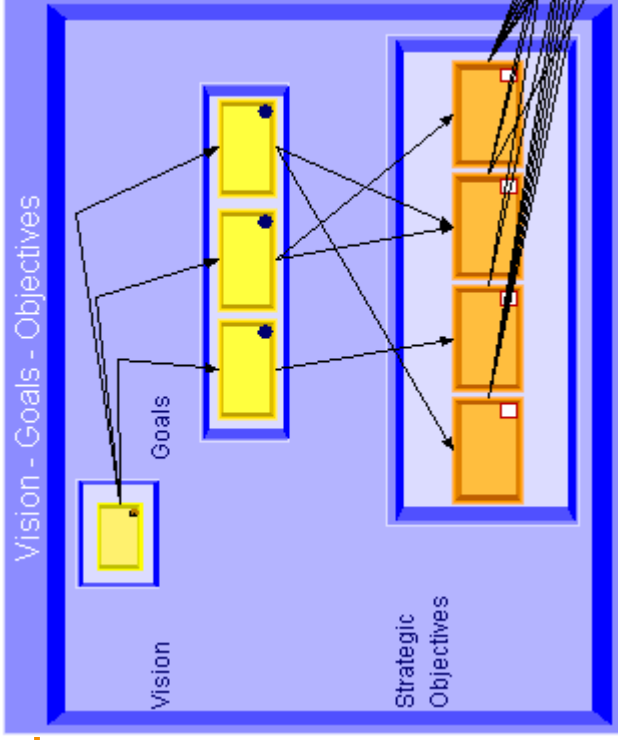
Business Discovery Services

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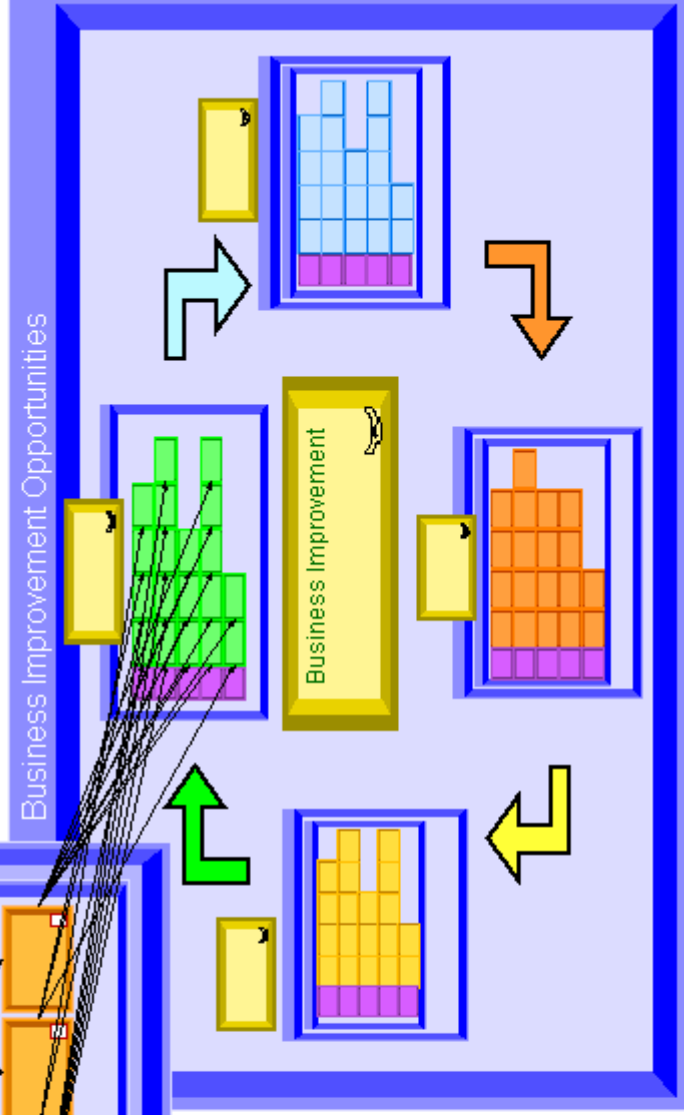
- Family of Services
 - Business Discovery (pre-implementation)
 - Business Value Assessment (post-implementation)
- Drills down specific business requirements using the BIO Framework
- Identifies financial impact of implementing initiatives and metrics for measuring ROI
- Provides an objective means of prioritizing initiatives and subject areas/data needed to support
- Enables Business and IT alignment
- Technology neutral

The results of the business (and information) discovery get mapped into to the Visual Consulting Model

Vision-Goals-Objectives

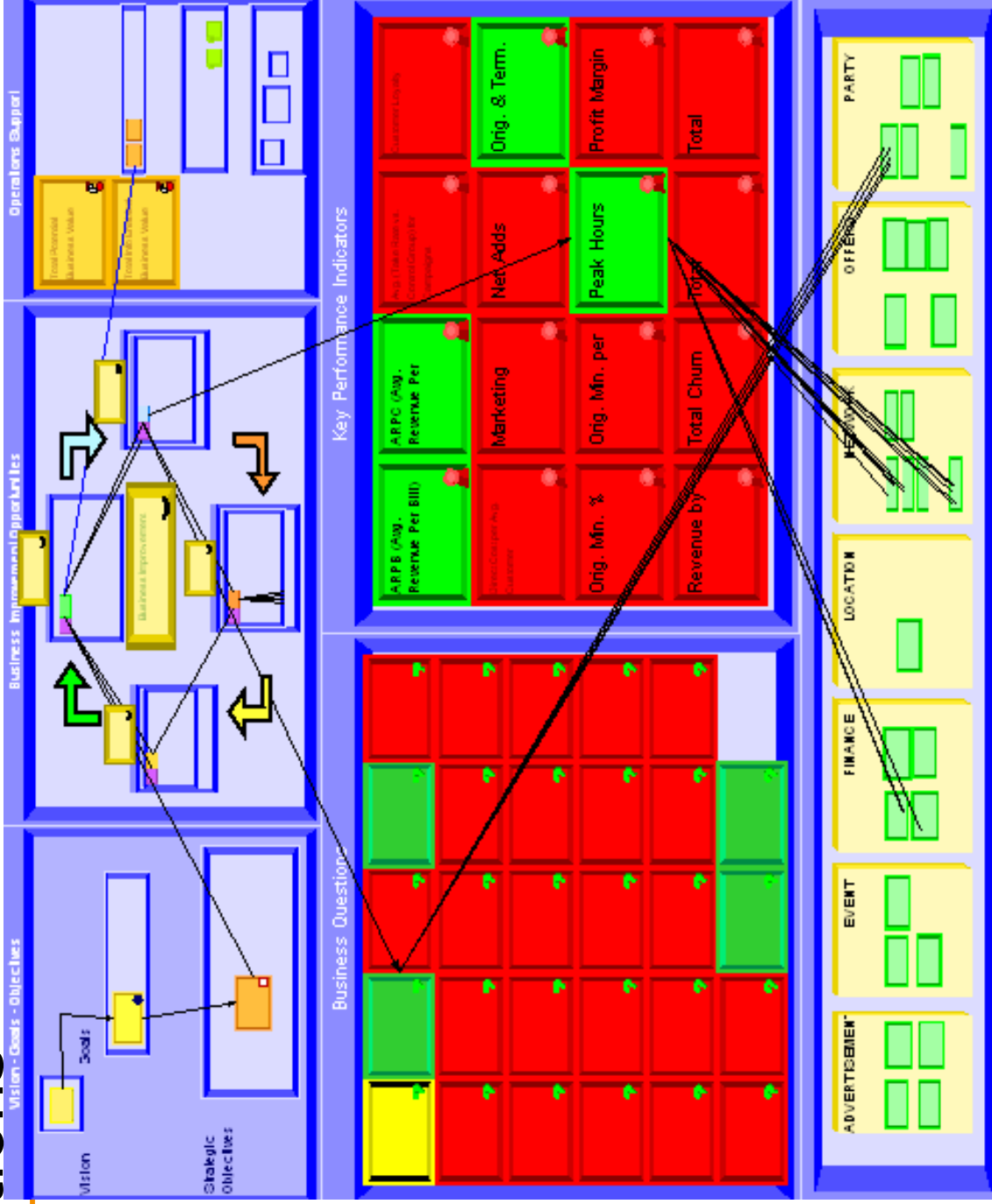


TO Business Improvements Opportunities



Connecting the dots... between industry LDMS, BIOS, Solutions

Business like this before.





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Questions?

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