Emerging Trends in Data Warehousing and Data Mining
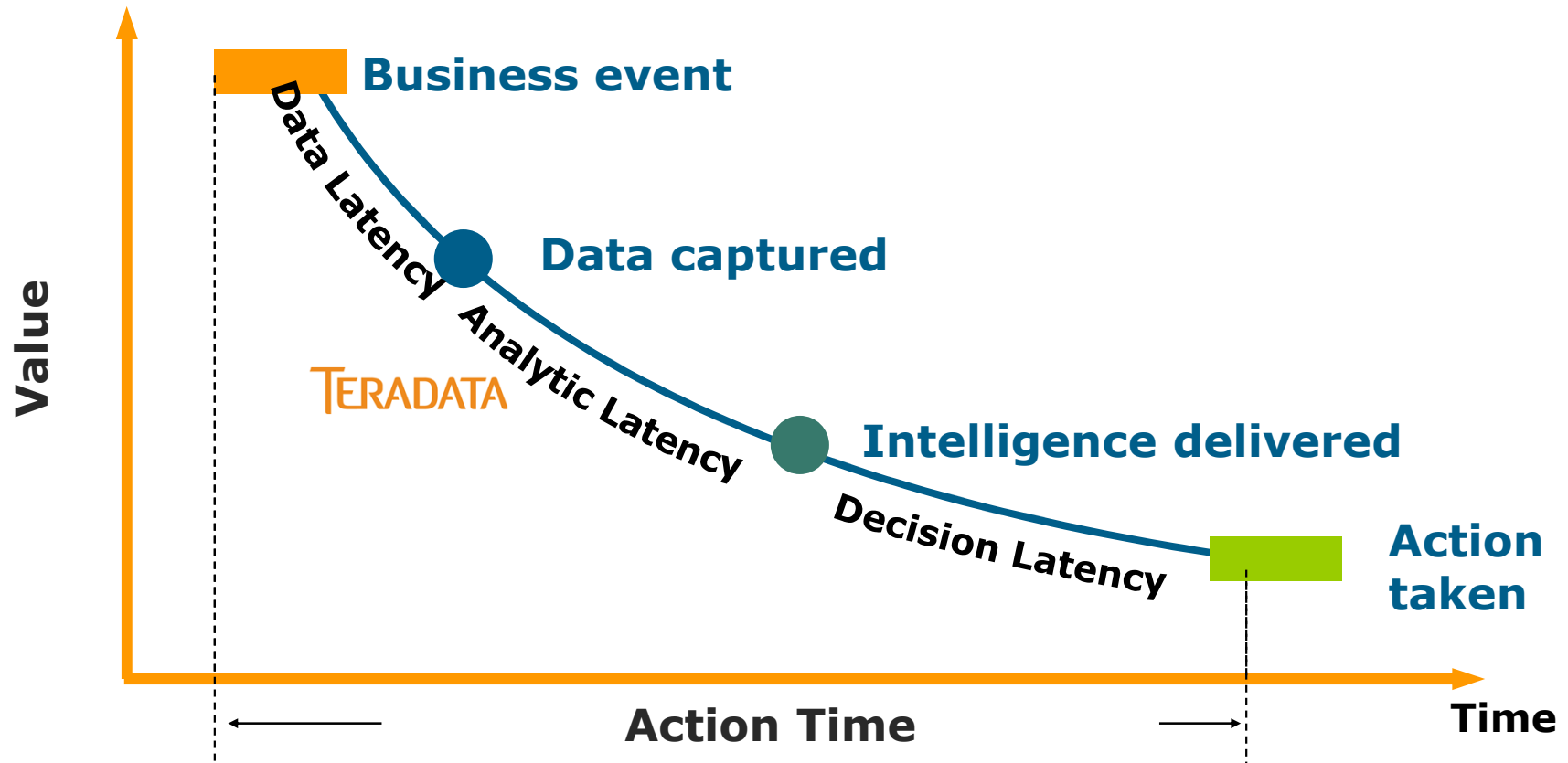
Girish Shivani

Principal Solutions Consultant
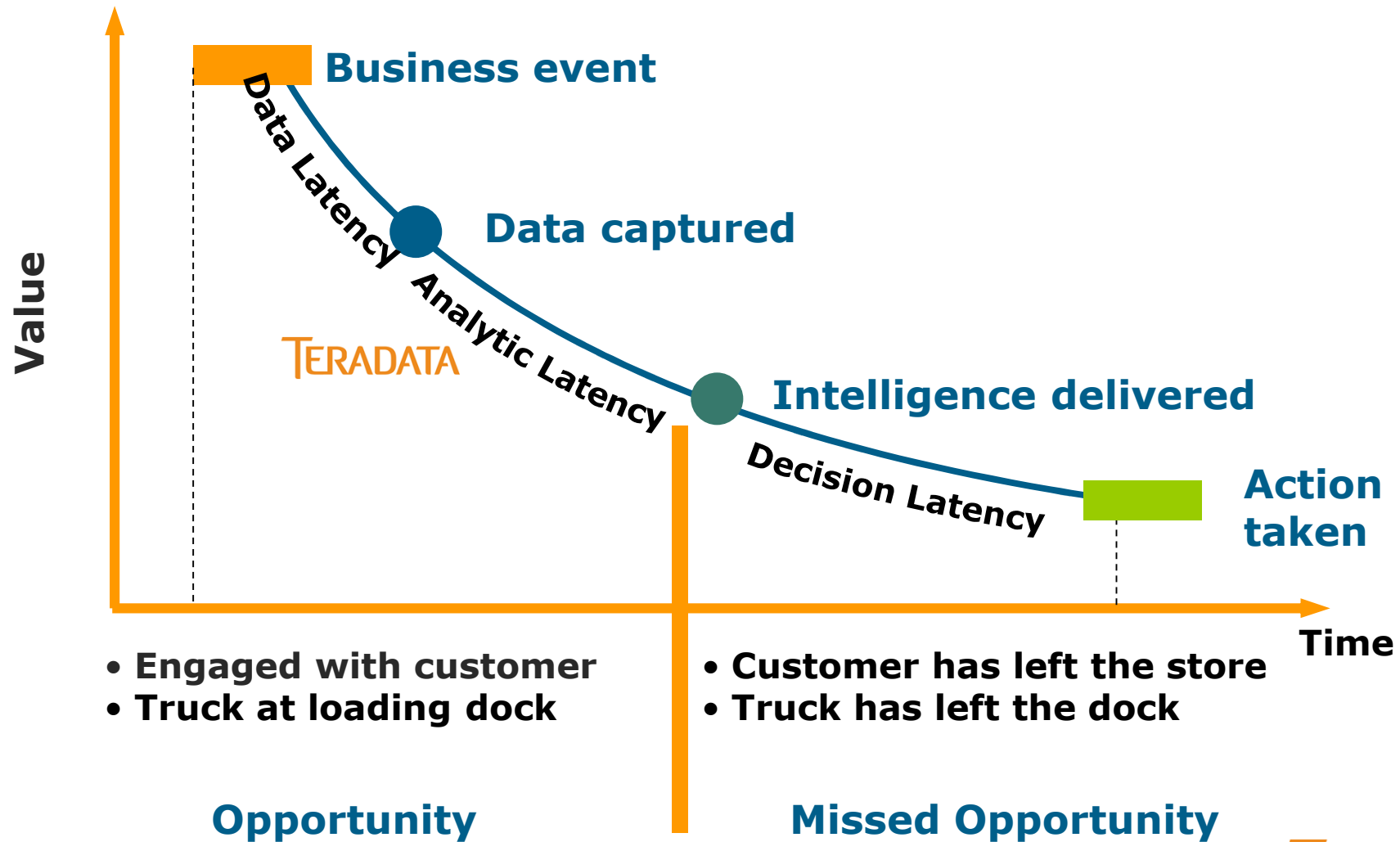
19th Nov 2011

TERADATA

Raising Intelligence

Accelerating Decisions

TDWI The Business Case for Real-Time BI
Based on concept developed by Richard Hackathorn, Bolder Technology

Accelerating Operational Decisions

Value

Business event

Data Latency

Data captured

Analytic Latency

Intelligence delivered

Decision Latency

Action taken

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Time

- **Engaged with customer**
- **Truck at loading dock**

- **Customer has left the store**
- **Truck has left the dock**

Opportunity

Missed Opportunity

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What Is Active Enterprise Intelligence?

- **Active**
  - > Better, faster decisions that drive actions
  - > Responsive and agile

- **Enterprise**
  - > Consistency – single view of the business
  - > Scope – across appropriate business functions
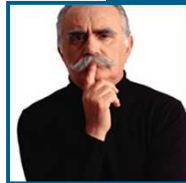 - > Reach – new operational users, processes, and applications

- **Intelligence**
  - > "Strategic" *Intelligence*, aligned to drive
  - > "Operational" *Intelligence*

What Is Active Enterprise Intelligence?

Helps You Make Better Decisions, Faster

Strategic Intelligence:
Great Insights about the Business

Align and Accelerate

Operational Intelligence:
Operations *People* and *Systems*
Become Smarter and Faster

Strategic Intelligence

- **"Back Office"** Corporate Users
  - > Tens to hundreds of users
  - > Knowledge workers in Strategic Planning, Marketing, Finance, Manufacturing, Quality Assurance, Supply Chain

- "Intelligence" for **Strategic Analysis**
  - > Sales Reporting, Forecasting, Inventory Analysis, Product Profitability Analysis, Financial Management, Customer Segmentation, Customer Profitability, Compliance, etc.
  - > BI-Tool Centrics

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Operational Intelligence

- **"Front Line"** users and customers
  - > Thousands to tens of thousands of users and customers
  - > Gate Agents, Cashiers, Dock Workers, Bank Tellers, Sales, Customer Service Agents, Customers, and Suppliers
  - > Self-Service Systems: POS, ATMs, Web
- "Intelligence" for **Operational Execution**
  - > Customer/product look up, individualized customer offers, transaction exceptions, supply chain visibility, event detection and notifications
  - > Application-Centric

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Accelerating Operational Decisions

- While the teller is still interacting with the bank customer
- While the customer is still in the check-out line
- While the customer service agent is still talking/listening

- While the customer is still using the ATM
- While the web page is still in front of the customer

- While the customer is returning merchandise they never bought
- While the crook is still defrauding your telecomm company

- While the train is still being loaded
- While the supplier still has an on-sale or in-stock situation

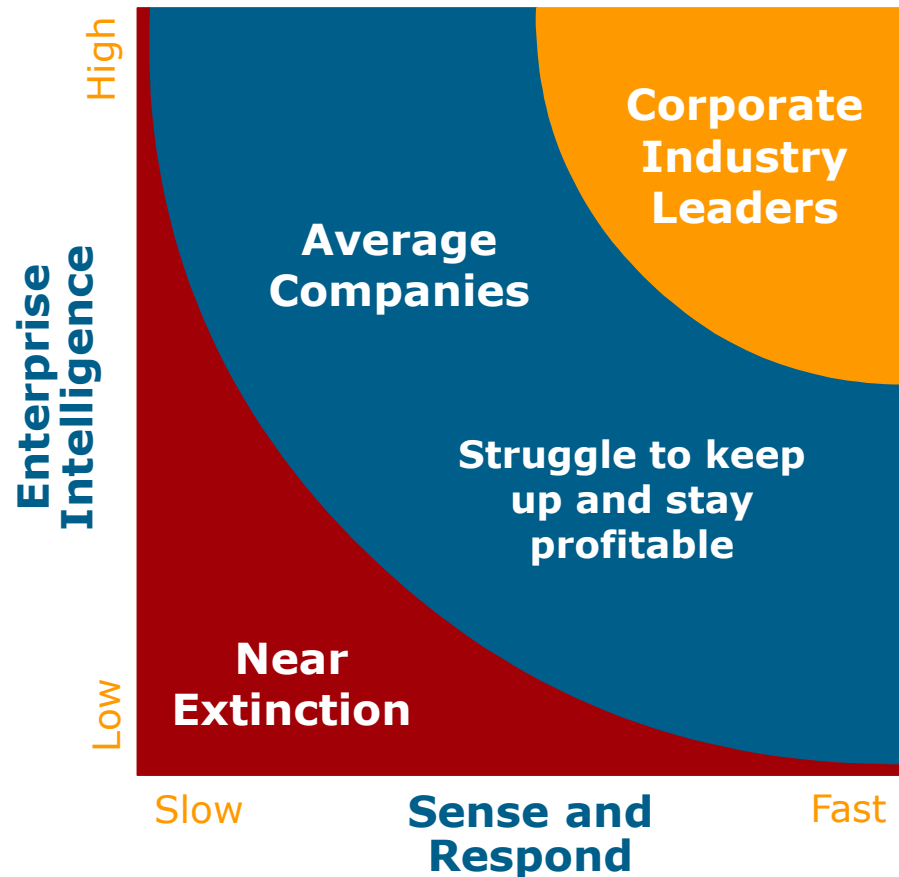Point-of-Sale   Call Center   Self-Service Kiosk   Self-Service Web   Loading Dock   Scheduling   Supplier

Why Align and Accelerate?

- Opportunities and threats at
  - Strategic Level
  - Operational Level
- Operational excellence
  - 1000s of small daily decisions add up = reputation and profitability
  - Aligned Insights → Right decision, just in time
  - Acceleration → Efficiency
- Strategic excellence
  - Foresight + planning = broad scope optimizations
  - Insights → Right plan
  - Speed → Time to re-strategize

Active Enterprise Intelligence

Corporate Industry Leaders

Average Companies

Struggle to keep up and stay profitable

Near Extinction

High

Low

Enterprise Intelligence

Slow

Fast

Sense and Respond

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Business Analytics Drivers

Analytics for Everyone

- Analytics complexity is growing
- Analytics is across the enterprise on data silos
- Data are growing at exponential rates
- Increasing adoption of the next generation analytics
- Integration of new data with existing business data is driving big, diverse data requirements
- Timeliness of analytics is a critical dimension of business value

The next generation analytic must support diverse data and analytics to optimize decision making at blazing fast speeds
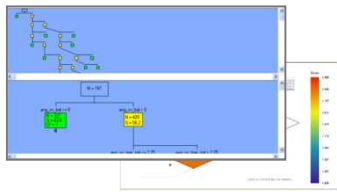
Interaction   **Transactions**
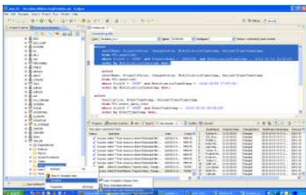
Analytics for Everyone
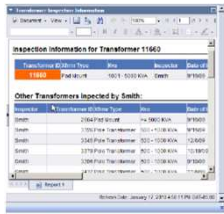
BIG DATA

OLAP Cubes

Data Mining

Geospatial

Application Development

Data Warehouse

Agile Analytics

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Raising Intelligence

Analytics for Everyone

BIG DATA

OLAP Cubes

Data Mining

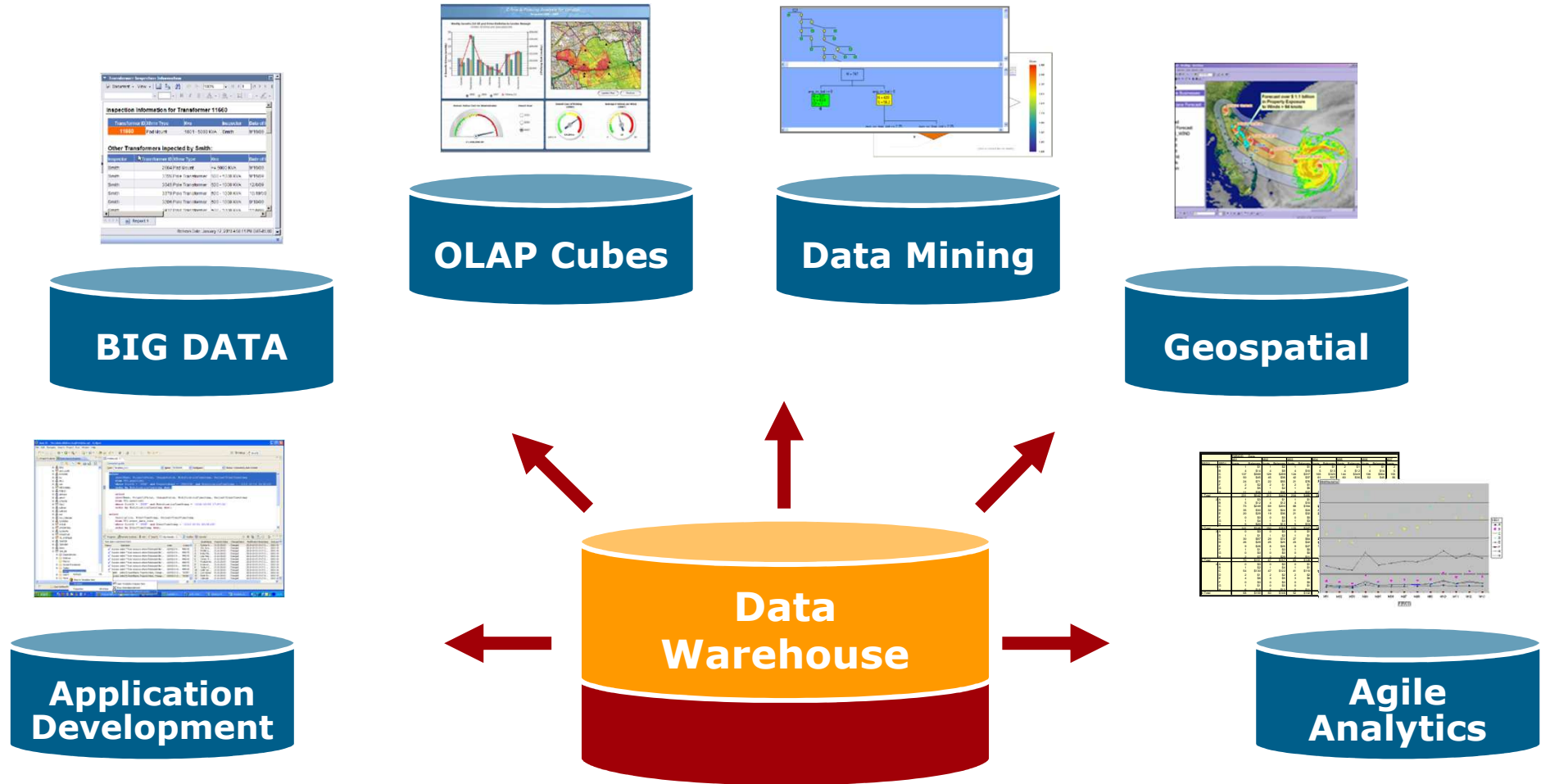**Geospatial**

Application Development

Data Warehouse
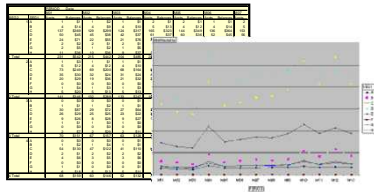
Agile Analytics

~~20-40%+ wasted moving data~~

Teradata Proprietary and Confidential

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Typical Advance Analytical Process

Model Deployment

Data Extraction

Model Development

Data Preparation

Data Extraction

Data Profiling

Business Understanding

Production ADS

Development ADS

Business Value

Time to Value

70% of the Development Process
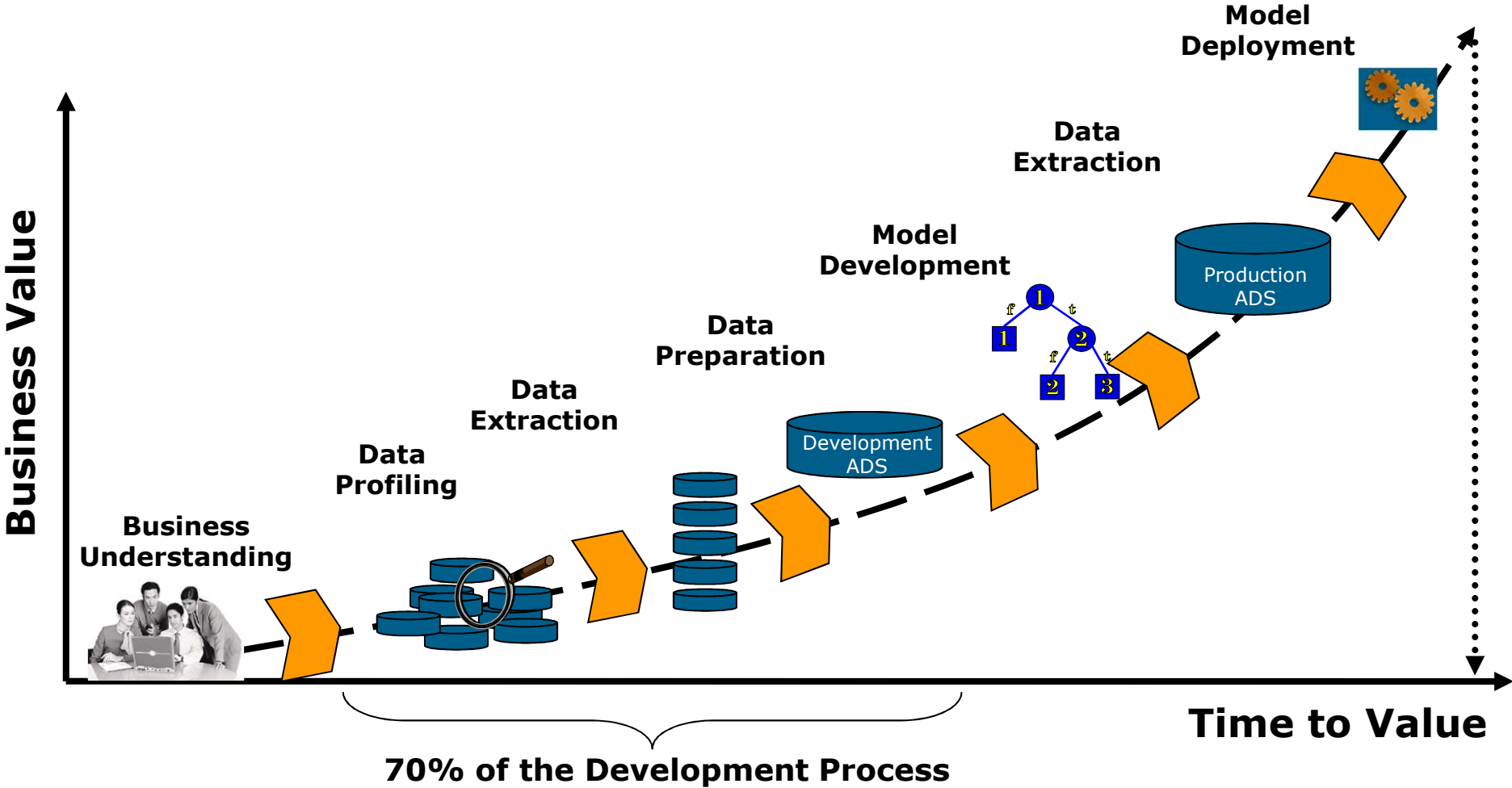
Time to Build & Deploy Models: *Weeks to Months*

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Advanced Analytics

Best Practice

| Data Exploration	Data Preparation	Model Development	Model Deployment
Explore all data directly in the database with Teradata Profiler	Transform and aggregate data in the database with Teradata ADS Generator	Sample your ADS data and build your model on an R client	Converts your R PMML model to SQL; automatically generates the production ADS
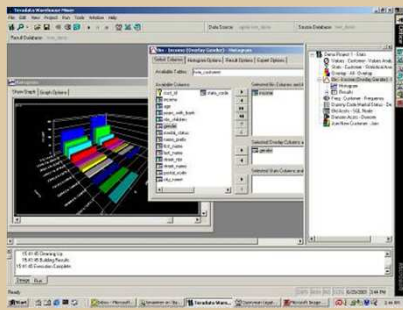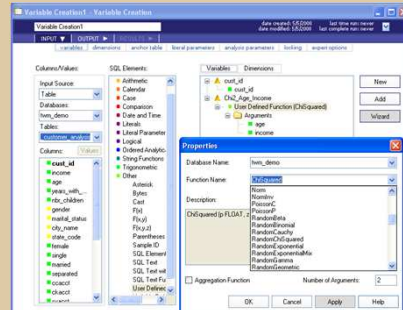
Teradata Profiler

Teradata ADS Generator
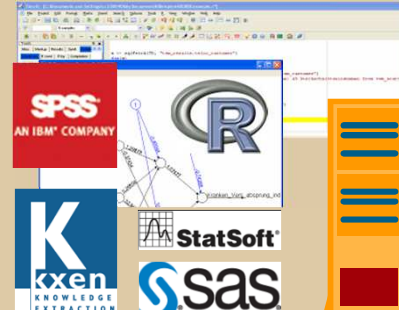
Sample Data — Teradata Warehouse Miner

PMML or UDF Models

Teradata ADS Generator

Automated process

Build ADS

Modeling ADS

SQL In-dbs Function

Production ADS

Automated process
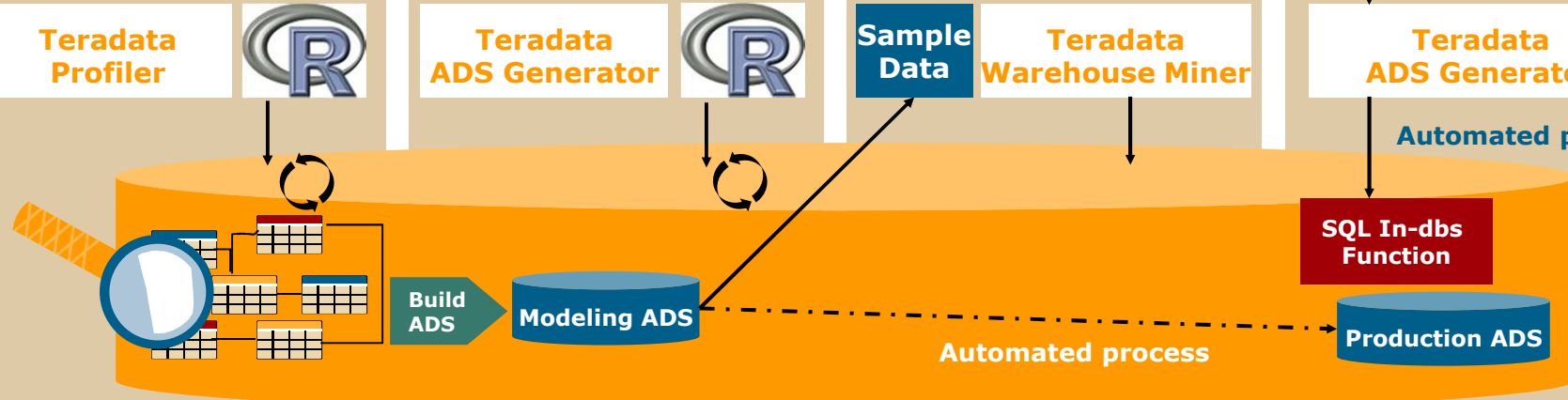
Advanced Analytics

- Teradata in-database advanced analytics includes:
  - > Partner optimizations with SAS, IBM SPSS Modeler, KXEN, and Information Builder Web Focus RStat
  - > Teradata Warehouse Miner
  - > Emerging technology: R
  - > Advanced Analytics COE Services
    - Advanced analytics business and architectural assessment
    - Analytic data and model development
    - Analytic optimization services
- Benefits
  - > Eliminate data movement to accelerate the process
  - > Lifts all data limitations with Teradata's scalability
  - > Leverages the parallel processing of the database
- Use Cases
  - > Creating a risk analytic data set that's refreshed nightly and shared across the analytic community to improve analytic output 10-fold
  - > Ideal for high frequency, large volume, or time critical applications
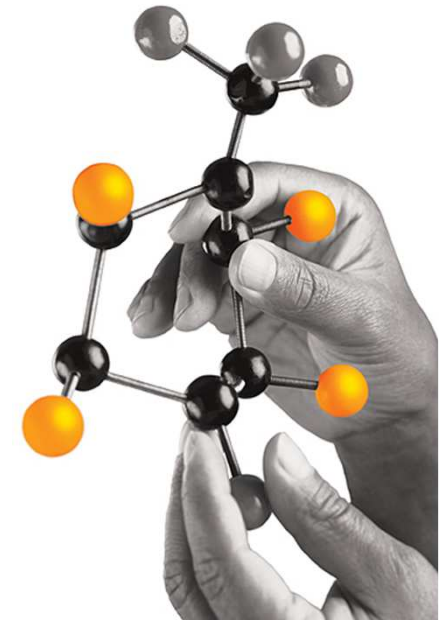
Demo: Overdraft Protection Offer

- Situation: Cash withdrawal at an ATM
  - > Customer has Insufficient Funds in Checking Account
  - > How would a bank handle this?
  - > How would a bank with Active Enterprise Intelligence react?
- AEI along with Advanced Analytics brings together:
  - > ATM with Targeted Message –
    - – Replace "Insufficient Funds" screen with differentiated offers
  - > Risk Analytics: Teradata ADW runs a web service risk analytic to decide on action plan(s), e.g., Overdraft Protection
    - – Direct Deposit Pay Check expected tomorrow – low risk
    - – Direct Deposit stopped in the last week – high risk
    - – Filed for bankruptcy this morning – high risk
    - – Long history with the bank – low risk
    - – Many other factors

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Example: Gaurav Sharma

- Situation
  - > INR10000 Cash Withdrawal, INR2800 balance
  - > Select Citywalk Friday 1:00 am
  - > What should we do?

- Risk Analysis
  - > He scores as relatively high risk with a negative combined portfolio balance (borrowed more than owns). No direct deposit set up and less than one year with the bank. ATM is at an entertainment area with high volume of ATM usage

- Operational Decision
  - > Normal Insufficient Funds Rejection

Gaurav Sharma
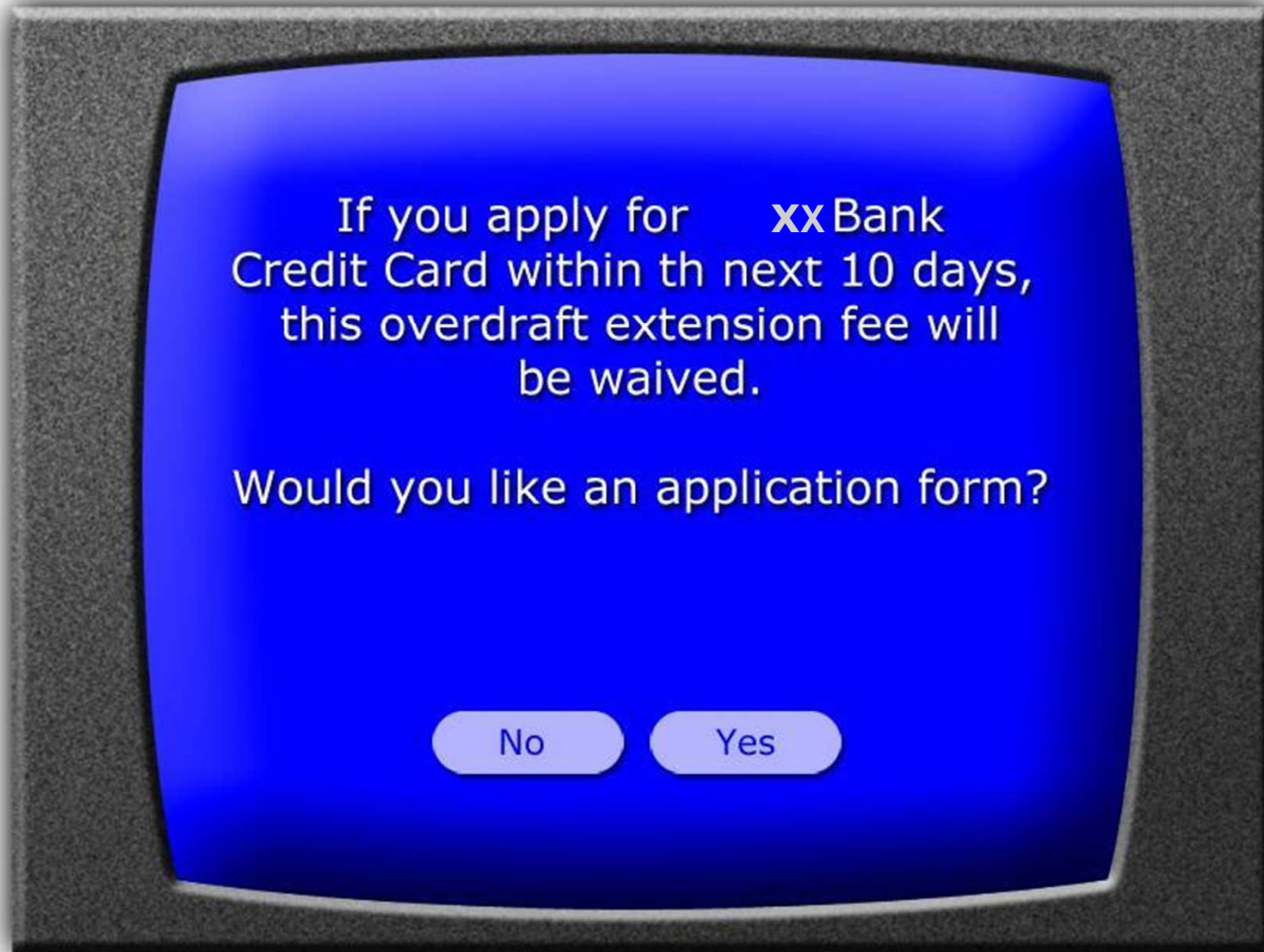
Gayatari Bose

- Situation
  - > INR20000 Cash Withdrawal attempt, INR10500 balance
  - > Select Citywalk Saturday, 5PM

- Risk Analysis
  - > She scores as a moderate-to-low risk and made overdrafts 5 times in the last 8 months. No late direct deposit. She is pre-qualified for a credit card account. The ATM from where the request is coming is not busy

- Operational Decisions
  - > Give her the cash for a small fee
  - > Attempt to sell "High Revolver" Credit Card

Gayatari Bose

Gayatari Bose

Gayatari Bose

Thank you for your interest in the XX Bank Credit Card. An application form will be sent to your registered address.

Remember, if you apply within 10 days this overdraft fee will be waived.

Vinay Mendiratta

- Situation
  - > INR25000 Cash Withdrawal (max), INR12800 balance
  - > Max Hospital, Saket
- Risk Analysis
  - > He scores as very low risk. Never had a loan default and has a high portfolio balance to withdrawal amount ratio. Requested the maximum allowed amount of money to withdraw from the ATM. The ATM is more than 200 Km from his home or work and in a hospital. The ATM has not been used in the last 15 minutes.
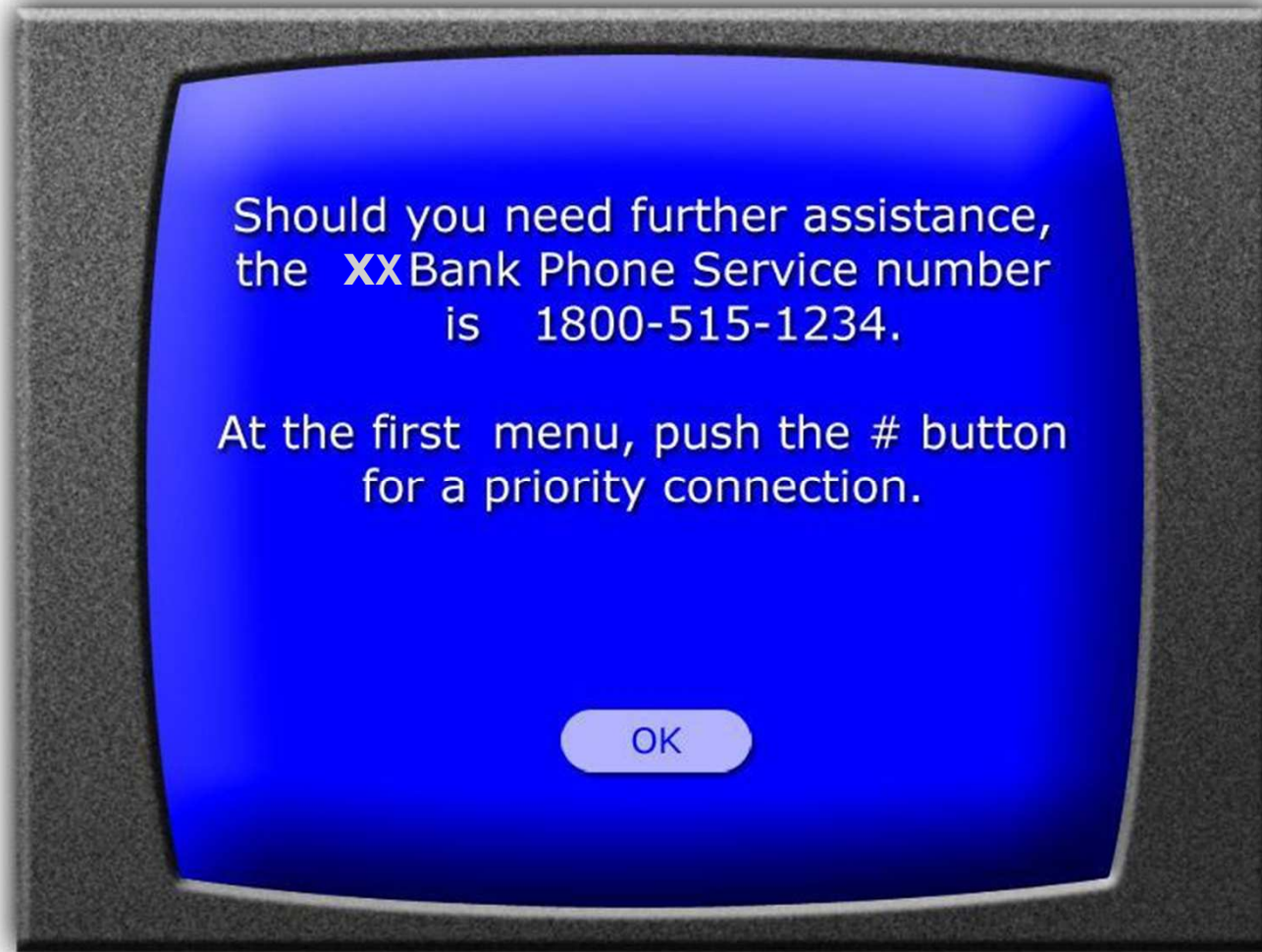- Operational Decisions
  - > Grant the request at no fee and
  - > Provide Call Center Number for additional help

Mr. Vinay Mendiratta

Mr. Vinay Mendiratta

Key Takeaways

- Teradata is driving a new kind of BI: **Active Enterprise Intelligence** and **Advanced In Database Analytics** to drive better, faster Operational Decisions

- Active Enterprise Intelligence has high value
  - > Align Strategic and Operational decisions
  - > Accelerate Operational decisions
  - > Empower your Frontline people

- Many leading-edge Teradata customers are using Active Enterprise Intelligence to make a difference
  - > Drive profitability, customer service, and operational excellence
  - > Across all industries
  - > Across multiple business functions

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Questions

Thank You

girish.shivani@teradata.com

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