



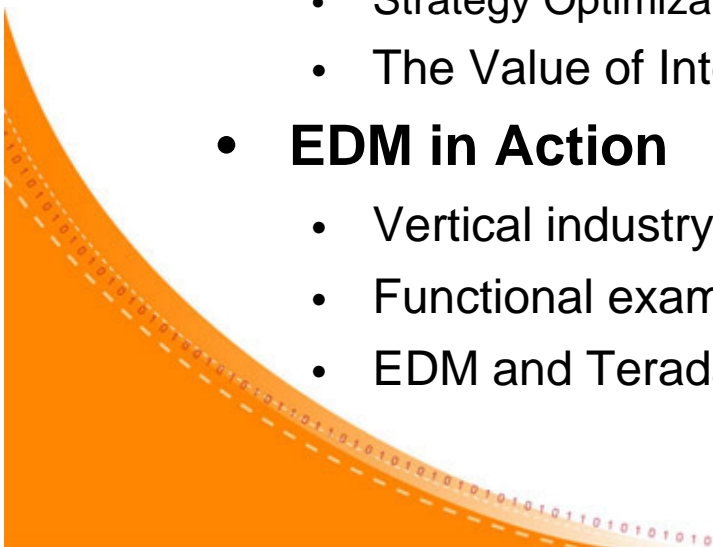
# *Realizing ROI through Decision Automation*

**James Taylor**  
**VP, Product Marketing**  
**Enterprise Decision Management Solutions**

# Agenda



- **Pain Points in Decision Management**
- **Introducing Enterprise Decision Management (EDM)**
  - Comparing BI to EDM
  - Understanding Decision Yield
  - Key Components of the EDM Lifecycle
- **An Incremental Approach to EDM**
  - Business Rules Management Systems
  - Predictive Analytics
  - Strategy Optimization
  - The Value of Integrated Data for EDM
- **EDM in Action**
  - Vertical industry examples
  - Functional examples
  - EDM and Teradata



## Opinion Research Corporation Findings – IT Professionals and Decision Automation



Observation	Data Point
Better decisions drive better results	<ul style="list-style-type: none"> <li>• 93% felt that front-line operational decisions impacted profitability, 61% significantly</li> </ul>
Existing systems are rigid	<ul style="list-style-type: none"> <li>• 85% expressed difficulty in changing decision-making criteria in their systems</li> </ul>
Slow time to market for new decisions	<ul style="list-style-type: none"> <li>• 52% felt it took months to get business changes implemented in production</li> <li>• 23% feeling it took them less than a week</li> </ul>
Current state of the art is primitive	<ul style="list-style-type: none"> <li>• 60% felt that automated decisions were inconsistent or required redundant logic</li> </ul>
Not leveraging data properly	<ul style="list-style-type: none"> <li>• 70% of CIOs/CTOs said they did not get the most value they could from their data.</li> <li>• 47% felt that an inability to blend business rules with data was preventing them optimizing value of data</li> </ul>
Large number of unaddressed decisions	<ul style="list-style-type: none"> <li>• 51% had automated about 25% or less of their decision domain</li> <li>• 79% had automated about 50% or less.</li> </ul>

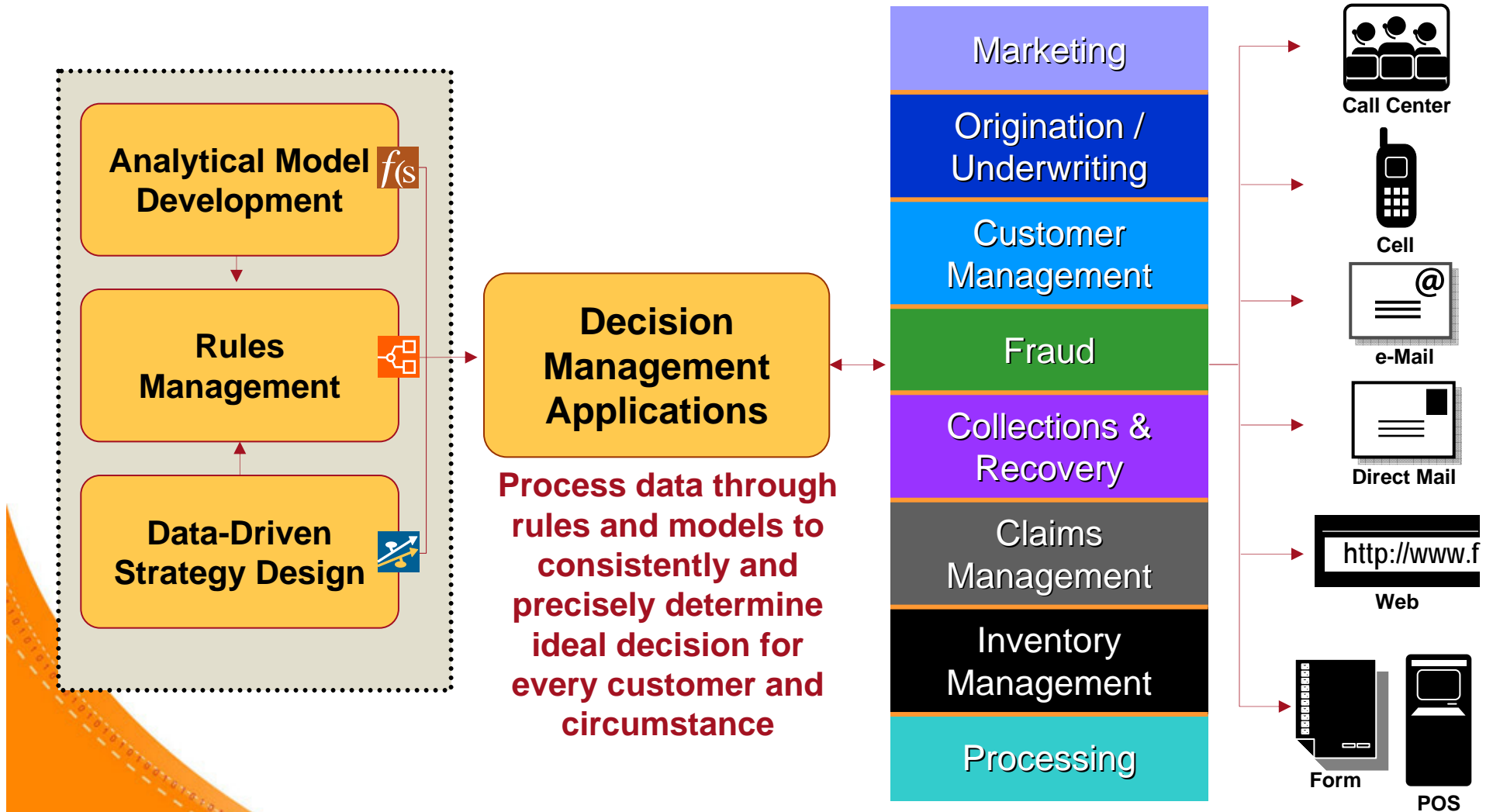
# Enterprise Decision Management



- **Enterprise Decision Management (EDM)** is an approach to automating and improving decisions across the enterprise to deliver:
  - **Precision**: Making more profitable & targeted decisions
  - **Consistency**: In the same way, over and over again
  - **Agility**: While being able to adapt 'on-the-fly'



# Enterprise Decision Management – Combining data driven insight with decisioning policies



## *How is EDM different from business Intelligence? From insight to automated action*



Where BI solutions provide information access and insight on customers...

Where BI is a back-room, offline operation controlled by knowledge workers...

Where BI analytics traditionally synthesize past performance...

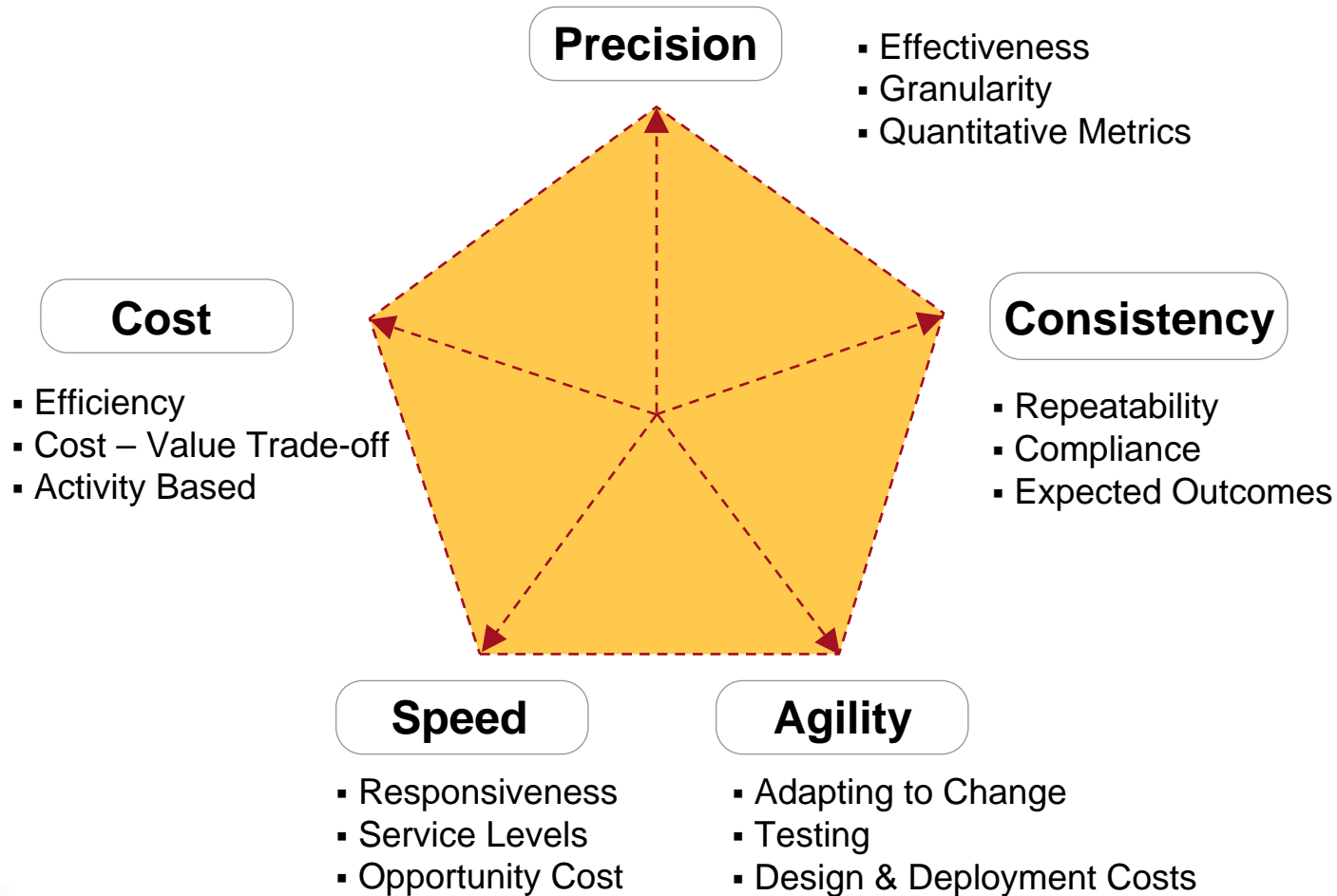
- **EDM uses customer-level insight to identify the ideal action to take in a particular transaction**
- **EDM is embedded in operational systems and processes. The decisioning must be tightly coupled with the operational system**
- **Predictive analytics are dominant in EDM systems, providing the linkage between historical data and future results critical to assigning the right action**

## ***Business drivers for EDM***

- **Need a higher return from previous infrastructure investments**
- **Harder and harder to eliminate costs using technology**
  - Movement to automate higher level ‘decision tasks’
  - Push for in-stream decisions or “Straight Through Processing”
- **Increasing business decision complexity**
  - Globalization of operations
  - Policy and regulatory pressure
  - Competitive pressure for more sophisticated decisions
- **Accelerating pace of business change**
  - Shorter windows of competitive advantage
  - Speed of business is outpacing speed of IT to react



# The results of EDM can be measured using five “Decision Yield” factors

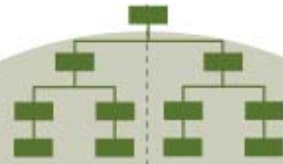


# Enterprise Decision Management – Key Components For Managing The Decision Lifecycle



## Decision Application Design

Design, integration & management of decisioning applications



$$= \sum_{s>s^*} \left\{ \frac{P_G f_G(s)}{f(s)} g - \frac{P_B f_B(s)}{f(s)} \right\}$$

## Decision Execution

Deployment of decisions into in-line transaction, production applications

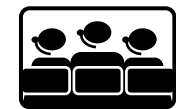


## Business Control

Simulation & management of business rules and strategies

## Analytic Modeling

Design and development of predictive and descriptive models



Call Center



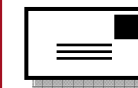
Cell



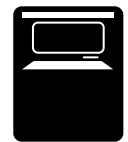
e-Mail



Web



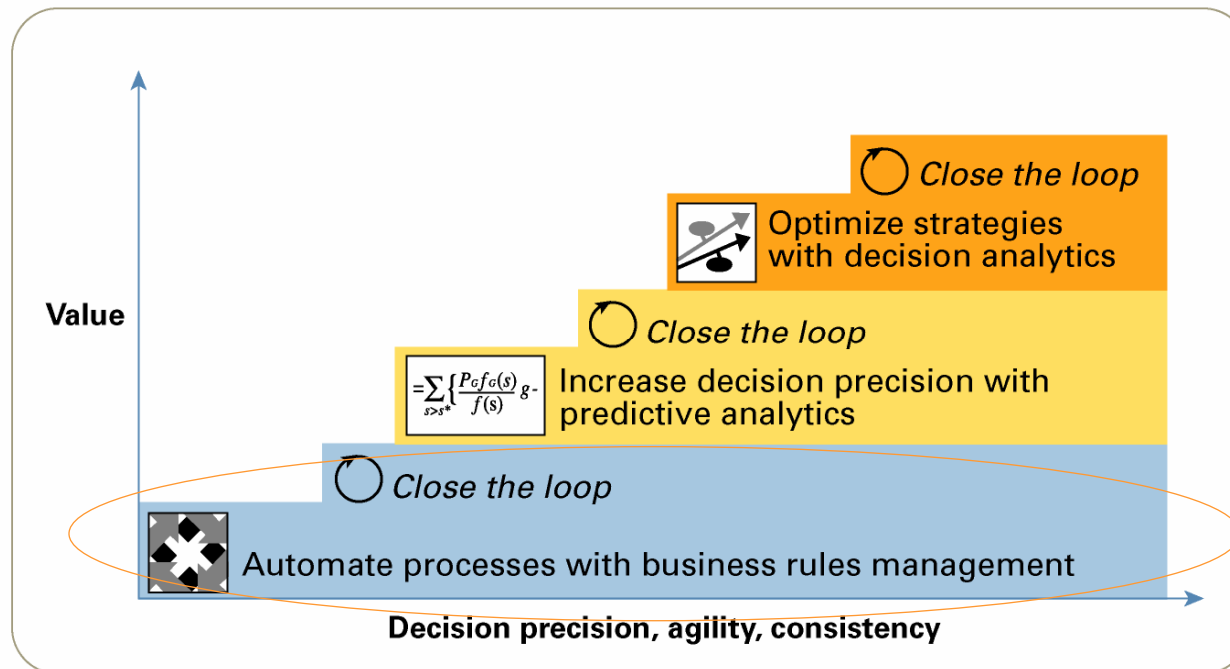
Direct Mail



ATM

Closed Loop Continual Improvement

# An Incremental Approach to EDM – Start with Business Rules Management

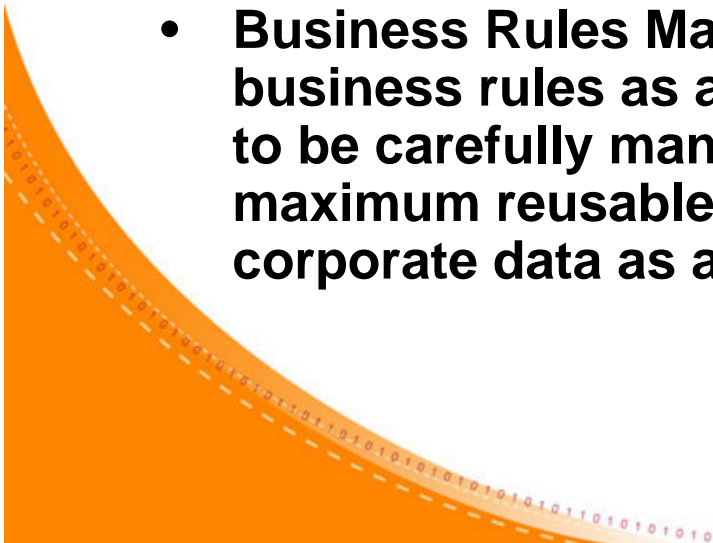


- **Enterprise Decision Management allows for decision automation processes to be quickly implemented, but with the ability to increase the value of these processes through the addition of analytic components.**
- **The first step is to begin by implementing a Business Rules Management System.**

# What is a Business Rules Management System?



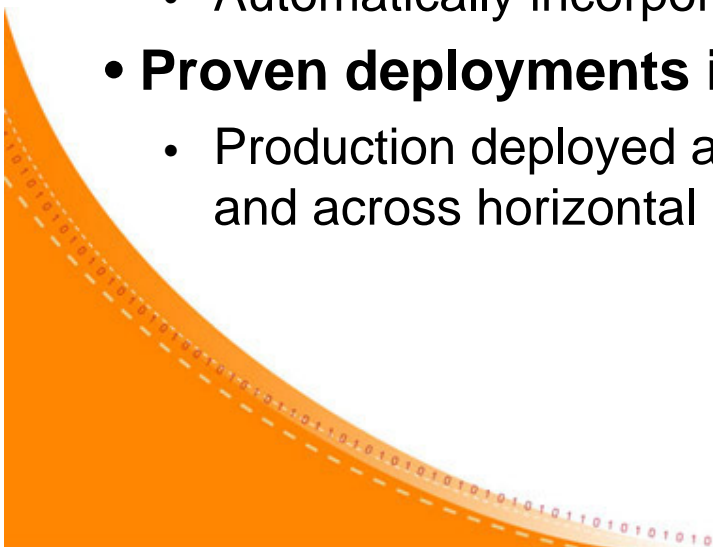
- **A complete software product for defining, executing, and managing business rules in an automated business application.**
- **Business rules are the logical statements of what to do (what actions to take) in different distinct situations.**
- **All companies have business rules:**
  - In lines of computer code
  - In policy manuals and memos
  - In the minds of experienced employees
  - In external regulations and mandates
- **Business Rules Management Systems (BRMS) treat business rules as a distinct asset of the company that need to be carefully managed and maintained so they provide maximum reusable value (similar to databases managing corporate data as a reusable asset).**



# Essential Features of a Business Rules Management System



- **Developed for complex real world applications:**
  - Manage tens of thousands of rules.
  - High performance for both interactive and batch processing requirements.
  - Designed to integrate with enterprise applications through a variety of methods and across multiple operating environments.
- **Agility in decision management:**
  - Change rule logic at any time without interrupting production operations.
  - Automatically incorporate rule changes in all running systems.
- **Proven deployments in large enterprise applications:**
  - Production deployed applications in multiple vertical industry segments and across horizontal business functions.



# Many Methods for Empowering Business Users to “own” their Rules



## Point-and-Click Editing

The discount named **Season Celebration** applies a \$ **50** reduction in price for rentals meeting the following criteria:

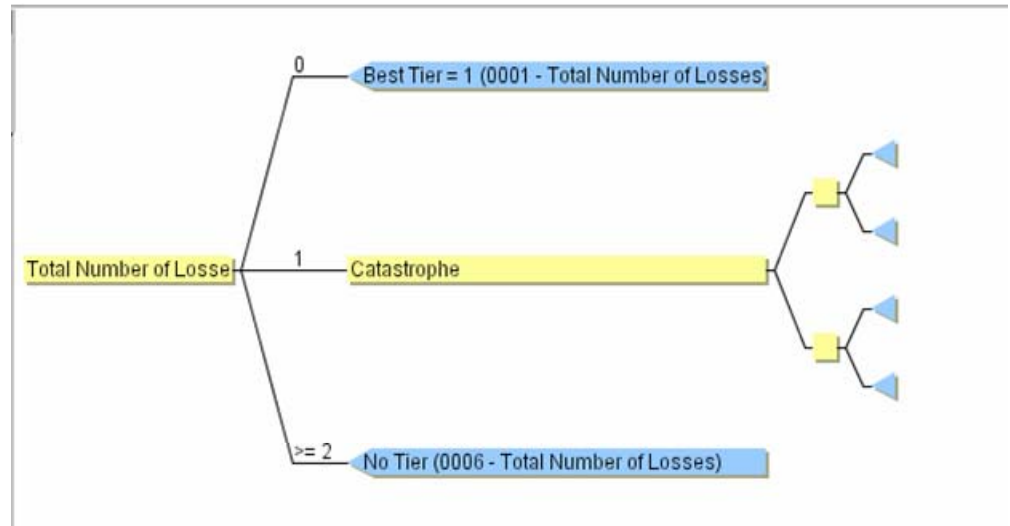
- The rental period is at least **7** days
- The customer is a loyalty program member

**< Add Discount Condition >**

Characteristic	Baseline Score	Description																																			
AgeYoungestDriver	0.0																																				
BodilyInjuryLimits	0.0																																				
NumSigClams	0.0																																				
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## Scorecards

## Decision Trees



CreditLimitDecisionTable-CreditLimitDecisionTable Instance [Instan...]

**CreditLimitDecisionTable Instance**

Card Type Condition	Student Bronze	Student Gold	Student Platinum
Income Condition	Credit Limit Action	Credit Limit Action	Credit Limit Action
7,500 - 9,999	1,000	1,500	2,000
10,000 - 19,999	1,100	1,600	2,100
20,000 - 29,999	1,200	1,700	2,200
30,000 - 39,999	1,500	2,200	2,700
40,000 - 49,999	2,000	2,500	3,000

## Decision Tables

# Business Rules Management Case Study – California DMV



## Business challenge:

- Vehicle fee calculation system has been built over many years and was difficult to maintain and update as fee policies change.
- CA DMV has two disparate computer systems (1 for branch offices and 1 for mail-processing) which were calculating fees inconsistently.

## Solution:

- Blaze Advisor rules technology automates and expedites the vehicle fee calculation process used to collect over \$4 billion annually.
- Blaze Advisor rules are created for all types of vehicles (cars, boats, motorcycles, etc.) and stored in one central repository.

## Benefits:

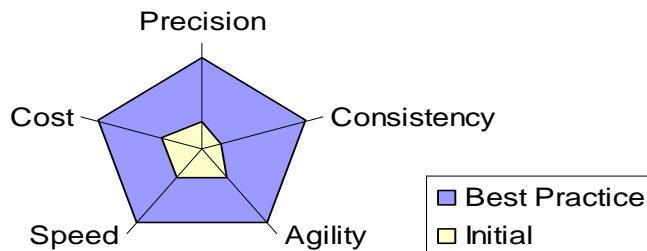
- Vehicle fees are calculated consistently across both systems.
- Fee calculation rules are easily updated by non-technical business people using Blaze Advisor rule maintenance applications.
- Reuse of existing legacy architecture (mainframe and Unix).
- Hundreds of thousands of fee calculations run on a daily basis.

# Level 1 Decision Automation

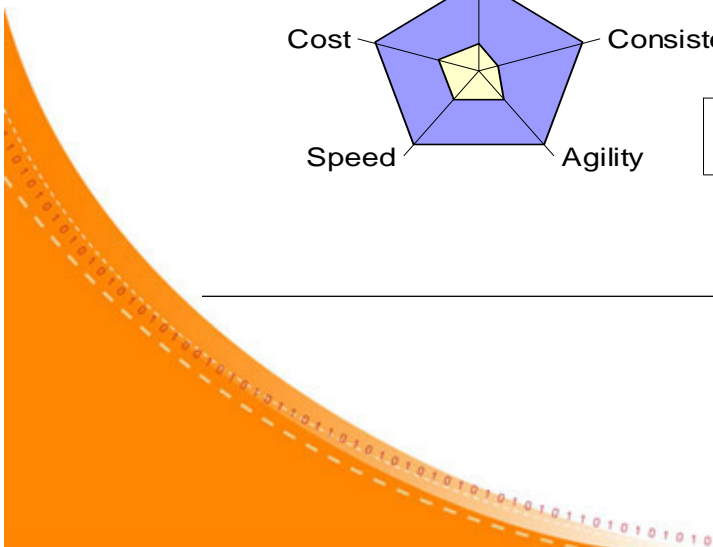
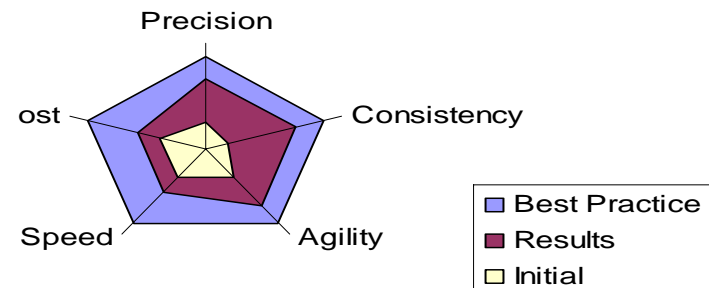


- Acting as a central decision source across multiple systems.
- Accurate pricing calculation based on fluctuating rules.

Decision Yield -- Before



Decision Yield -- After



## *Business Rules Management Case Study – First American Field Services*



### **Business challenge:**

- First American was having difficulty with a paper-intensive, manual process to manage and inspect 150,000 default mortgage properties per month.
- The services that First American provides require meeting the regulatory requirements of several different government regulatory agencies, both at the federal and state level.

### **Solution:**

- Blaze Advisor is the decision management component of First American's Property Inspection Maintenance System (PIMS).
- PIMS automates pricing calculations, initiates work processes and instructions to contractors, and manages escalations for exception processes.

### **Benefits:**

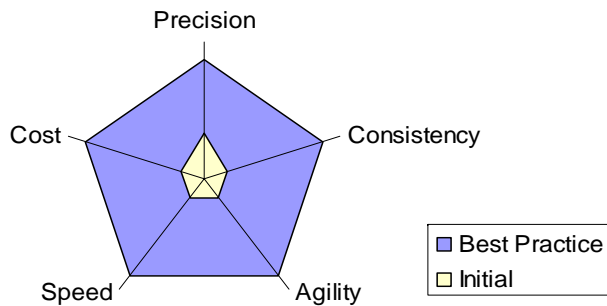
- Faster and more accurate project completion.
- Consistent application of complex regulations.
- Dramatic reduction in paper-based processes and associated costs (reduced express courier deliveries by \$90K/month).

# Level 2 Decision Automation

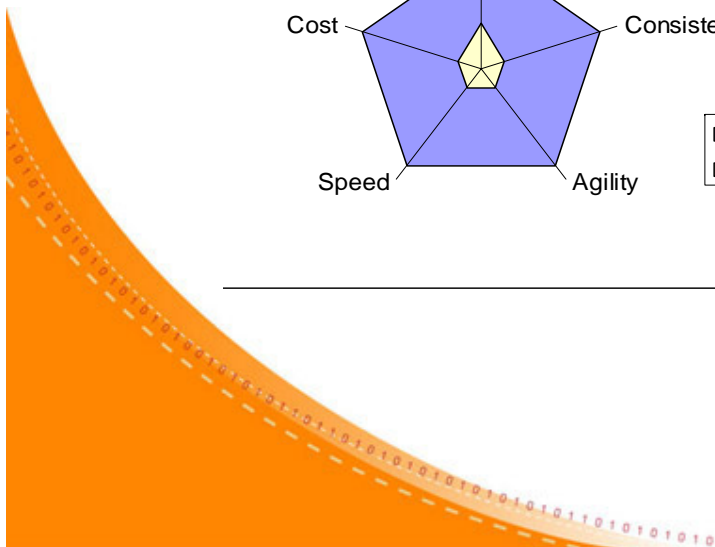
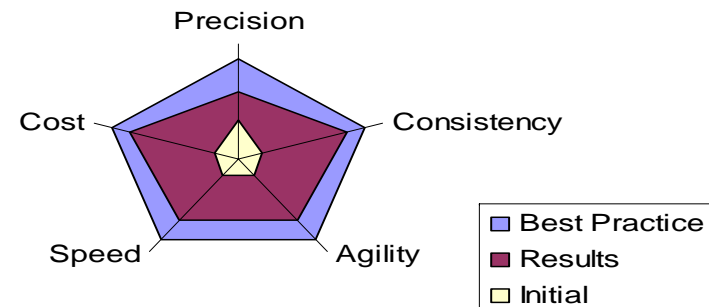


- Multi-tiered regulatory compliance.
- Effectively managing a large number of distinct functions (pricing, process automation, etc.).

Decision Yield -- Before



Decision Yield -- After



# *Business Rules Management Case Study – Auto Club Group*



## **Business challenge:**

- To effectively and efficiently support market expansion and continued profitability, ACG identified the need for an automated underwriting solution. This solution needed to handle complex underwriting functions, such as tiering, referral and knock-out policies.
- In addition, ACG wanted to automate their claims management processes.

## **Solution:**

- The ACG team determined that to provide flexibility and enhanced rule capabilities, a third-party rules engine would be a more flexible and reusable solution than developing a homegrown rules solution.

## **Benefits:**

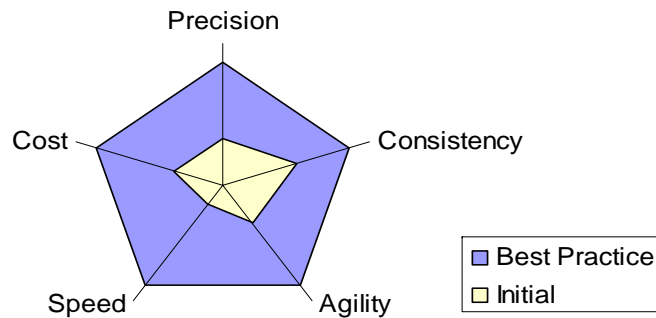
- Reduced manual underwriting review from 100% to 1% of policy applications.
- Automated underwriting would result in improved loss ratio, expense ratio, cycle time, and quality across the entire book of business.

# Level 3 Decision Automation

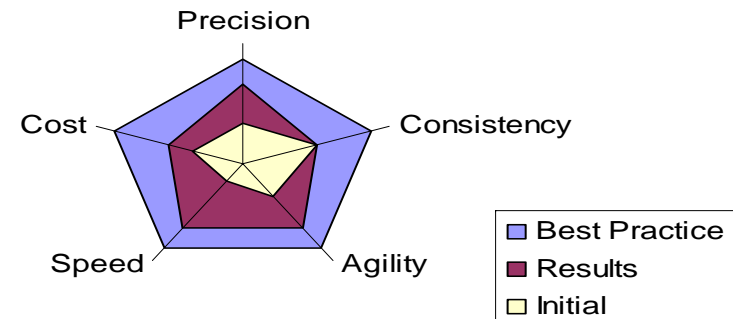


- Complex segmentation functions for tiered pricing.
- Ability to automate high-value activities, such as claims management and fraud analysis.

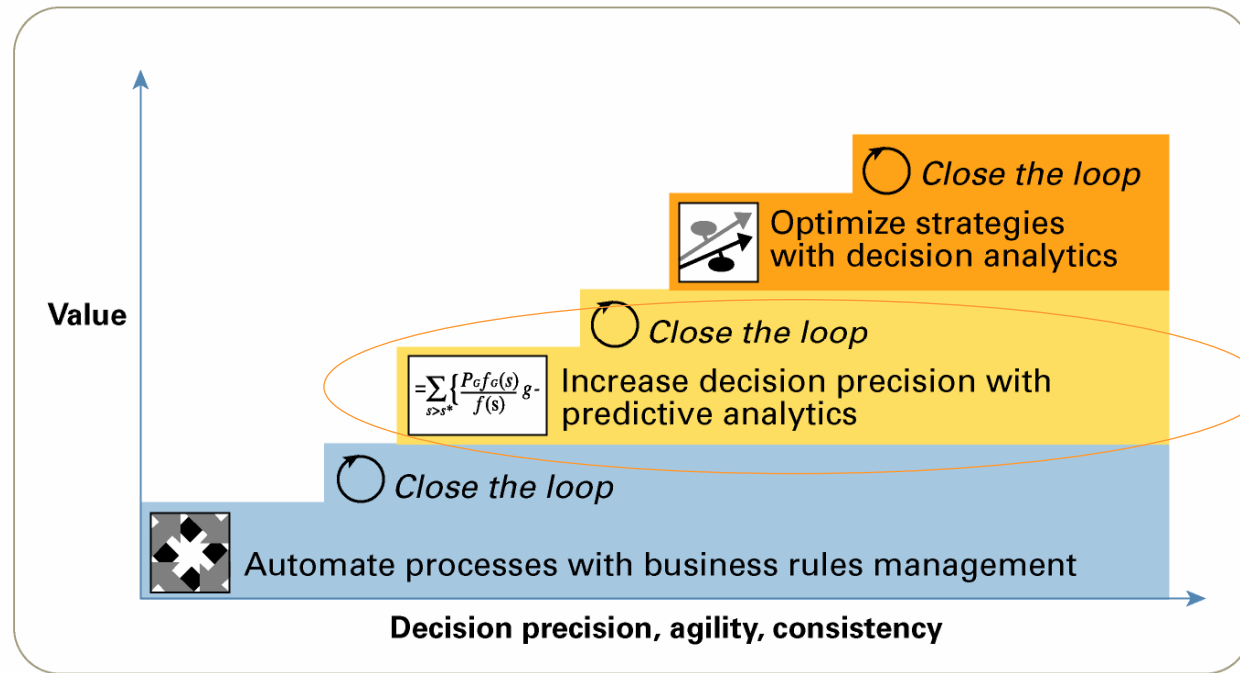
Decision Yield -- Before



Decision Yield -- After

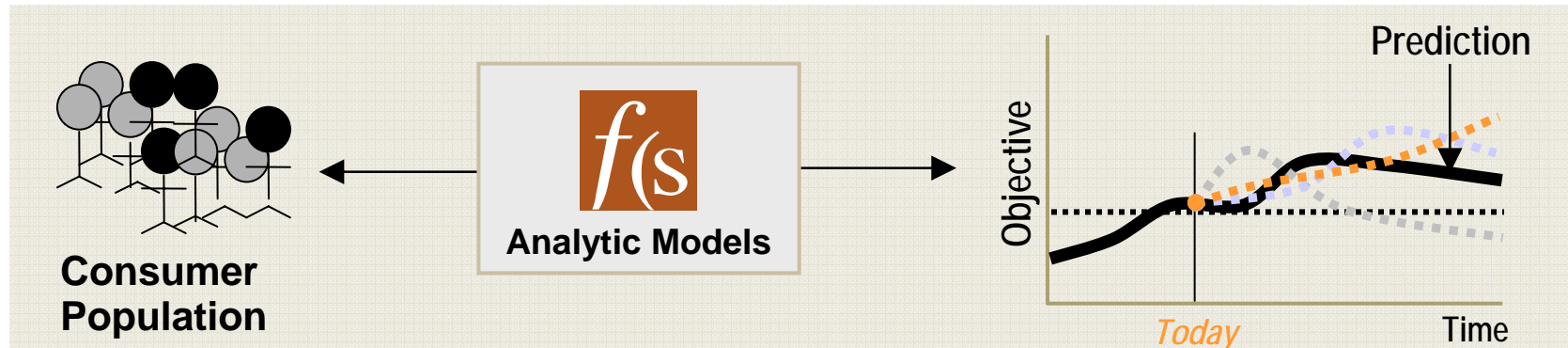


# An Incremental Approach to EDM – Adding Predictive Analytics



- Improve the quality of decisions through the implementation of predictive analytic models.
- Increase the value of EDM by incorporating analytic models within the Business Rules Management System.

# Predictive Analytics in Decisioning

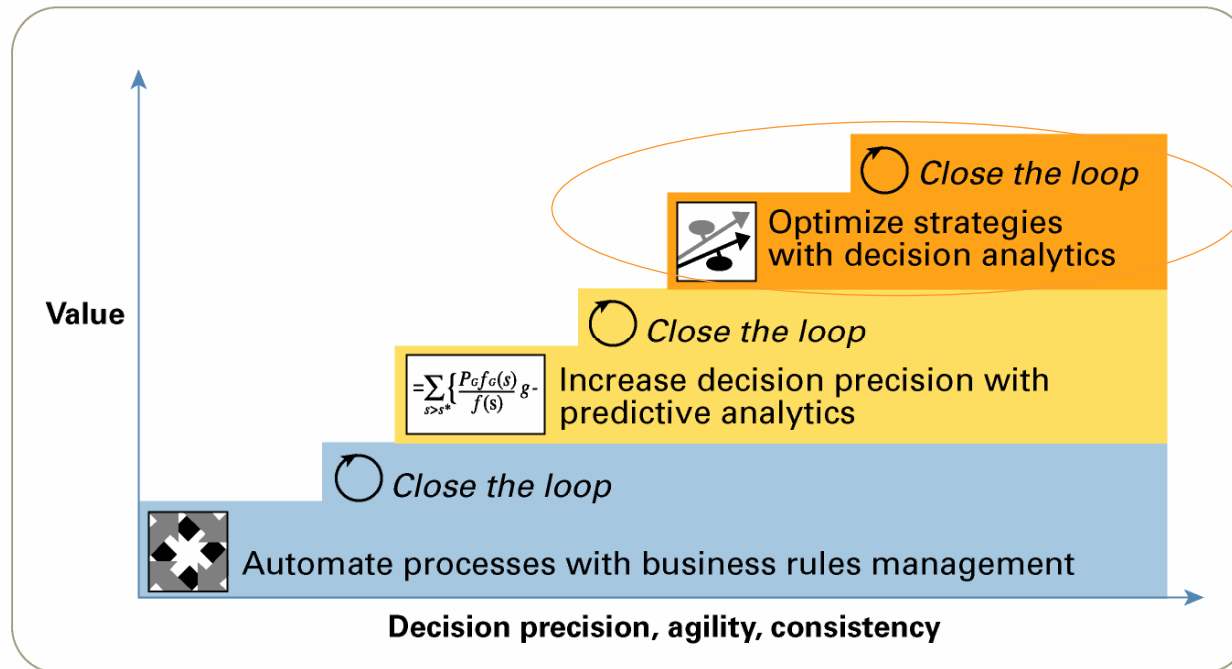


- Predictive analytics create mathematical representations (models) of a population to make actionable predictions on individual outcomes.



- The accuracy of predictive analytics can make the difference between capturing a profitable customer and a loss-generating customer.

# An Incremental Approach to EDM – Adding Strategy Optimization



- Assign the optimal action for each prospect/account given specific business constraints.
- Simulate various scenarios to design optimal business strategies, then operationalize these strategies through the Business Rules Management System.

## Utilizing Optimization Decision Models



*For individual-level optimization decisions to be effectively executed, every customer touch-point must be enabled to create and then execute the optimized decisions when interacting with a customer.*

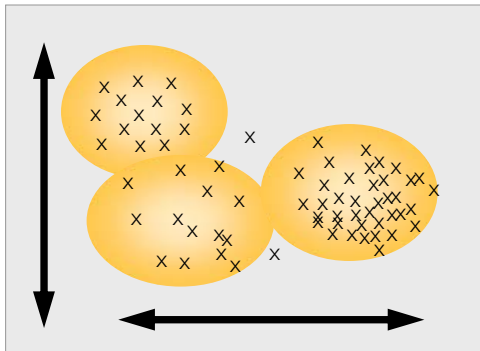
- **Individual-level optimization decisions must often be made at customer touch-points:**
  - Call center
  - Front office
  - Website
  - E-mail
- **This means that the sophisticated mathematics is a “front office” function, i.e.:**
  - Optimization recommendations must be made accessible to the customer-facing employee during an customer interaction.



# From Decision Analysis to Decision Management



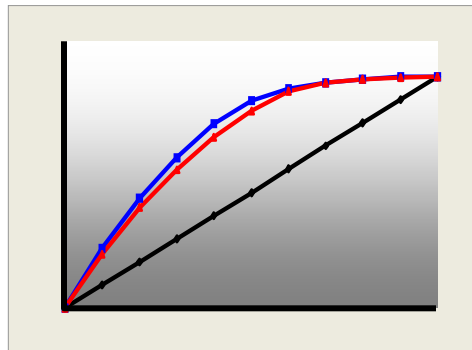
## Descriptive Analytics



How do I use data to learn about my customers? Who are my best/worst customers?

- Customer segmentation
- Customer profiling
- Historical response profiling

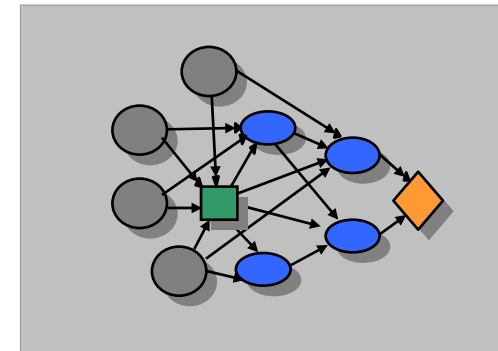
## Predictive Modeling



How are those customers likely to behave in the future? How do they react to the myriad ways I can “touch” them?

- Scoring
- Action-based prediction
- Customer response elasticity

## Decision Optimization



How do I leverage that knowledge to extract maximum value from my marketing investments?

- Judgmental strategy design
- Offer optimization
- Treatment / touchpoint optimization

*Knowledge - Description*

*Action - Prescription*

5%

Incremental Profit Impact

20%

# Integrated data adds value to EDM



## Evolution to Enterprise View

### Multi-Dimensional Trade-Off Assessment

### Enterprise Decision Management

- Brings all predictive analytics into a single decision framework
- Assign optimal action given specific business constraints

### Predictive Models or "Scores"

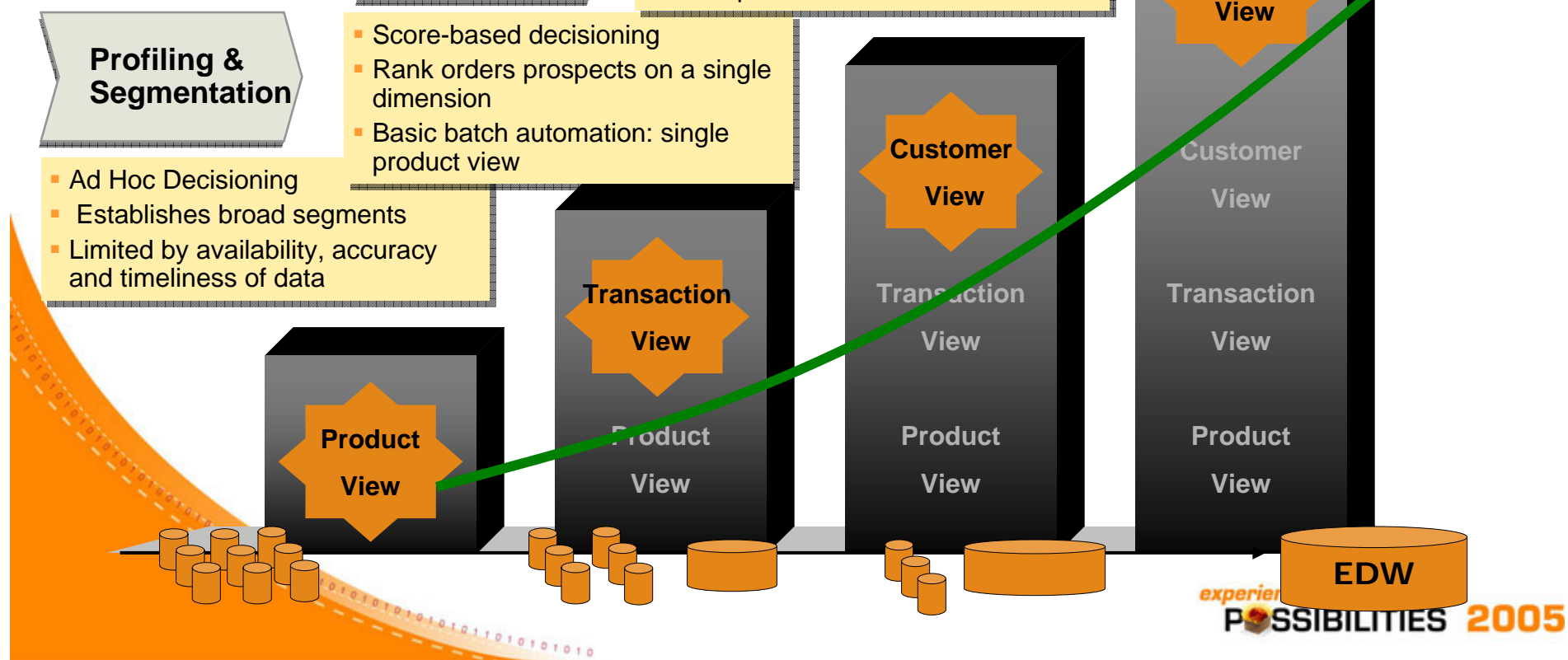
- Business rule-based decisioning
- Real-time customer-level strategies
- Creates micro segments by matrixing 2 or 3 predictive models

### Profiling & Segmentation

- Ad Hoc Decisioning
- Establishes broad segments
- Limited by availability, accuracy and timeliness of data

- Score-based decisioning
- Rank orders prospects on a single dimension
- Basic batch automation: single product view

ROI



## *EDM Sample Industry Applications*



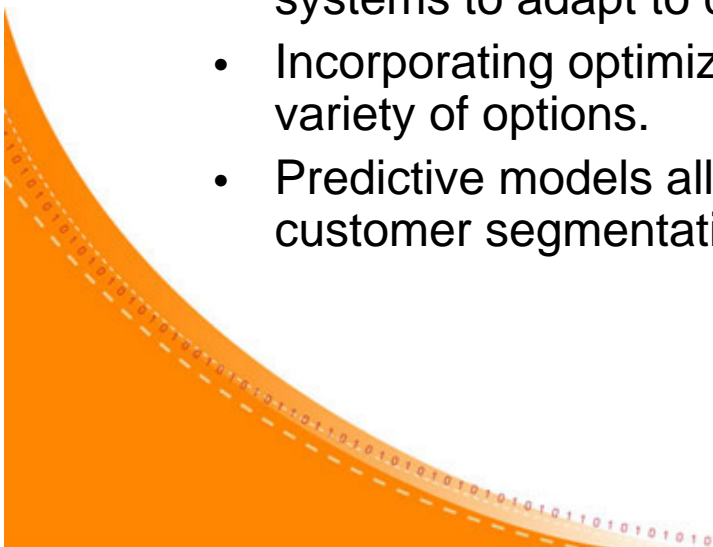
- **Finance**
  - loan origination, credit approval, securities trading compliance
- **Government**
  - fee determination, eligibility verification
- **Healthcare**
  - clinical guidance, admissions management
- **Insurance**
  - risk assessment, underwriting, claims processing
- **Manufacturing**
  - warranty claims, engineering design, product configuration
- **Telecommunications**
  - service level management, network management



## Using EDM to Provide Personalized Service



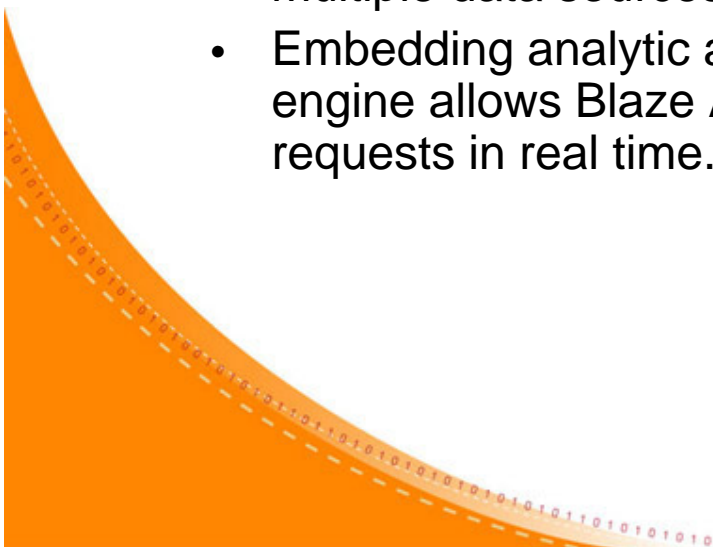
- **Providing personalized product offers and services gives businesses a competitive advantage over their competition.**
- **Personalization is more than just scripting responses for various situations.**
- **The best offer can change based on the situation, there is not a 1:1 correlation between the offer and the customer.**
  - Blaze Advisor provides the optimal response/offer based on a combination of information inputs, business rules and data analysis.
  - Business rules can be easily updated or added, allowing business systems to adapt to changing business conditions in real time.
  - Incorporating optimization models provides the best offer among a wide variety of options.
  - Predictive models allow the offer to be based on a highly accurate customer segmentation tier or profitability score.



## Using EDM to Enable Call Center Personnel to Handle Complex Customer Issues



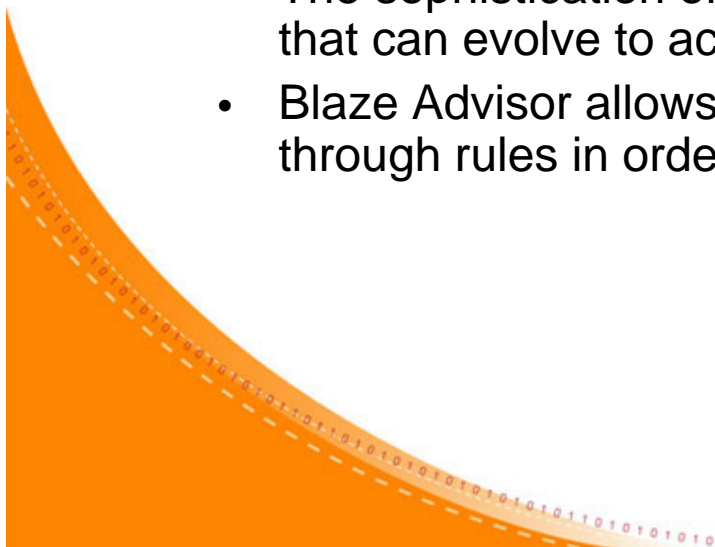
- **Call center personnel need to be able to react quickly, while providing the optimal response to the customer.**
  - Making the right decision can require detailed analysis of large amounts of data, but customers expect an immediate response.
- **The call center employee's value is in the human interaction with the customer.**
- **The more complex the decision, the greater the need for business decision automation:**
  - Blaze Advisor can rapidly process large amounts of data from multiple data sources.
  - Embedding analytic and optimization models within the rules engine allows Blaze Advisor to quantitatively assess decision requests in real time.



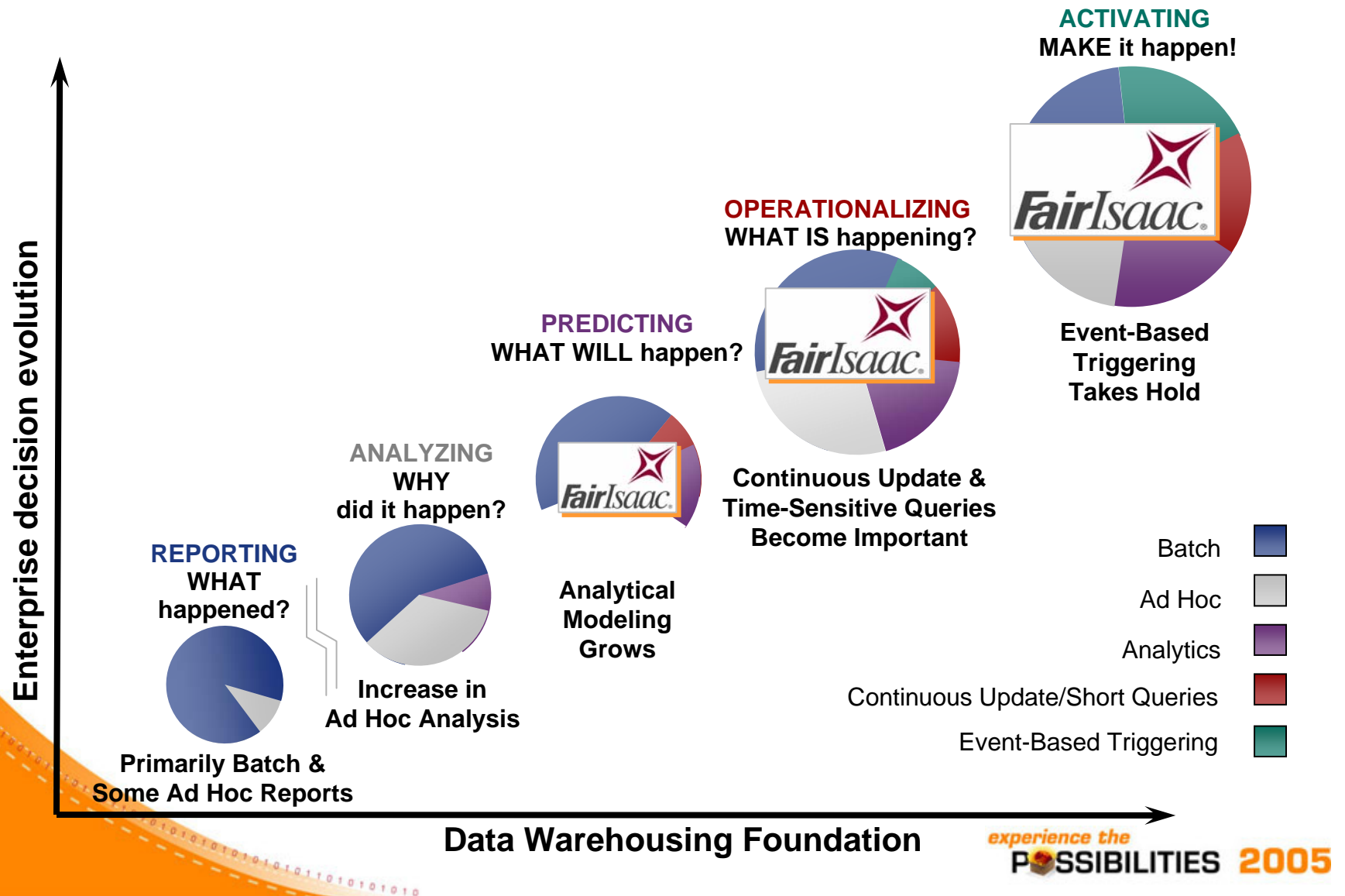
# Using EDM to Detect Fraudulent or Non-Compliant Transactions



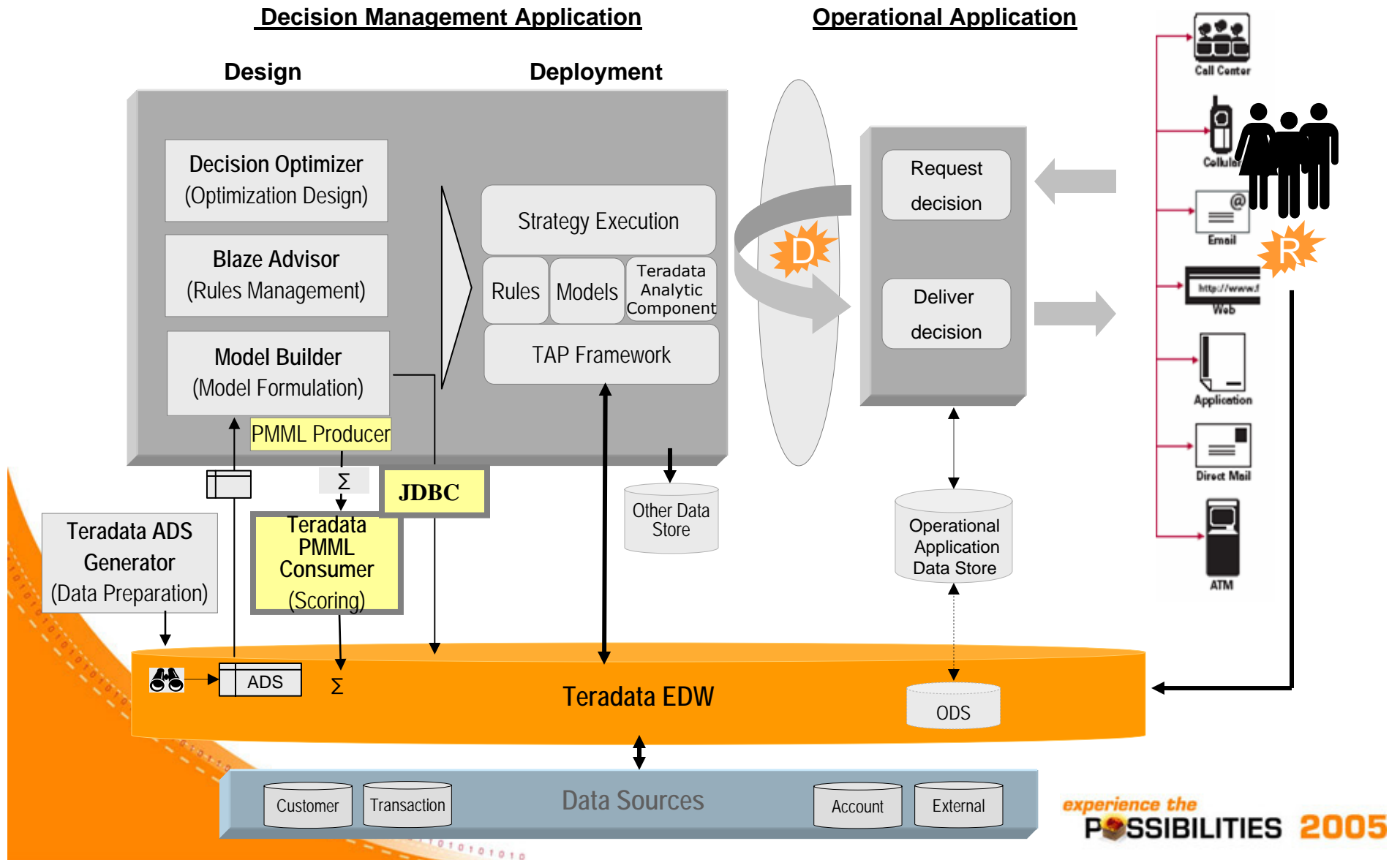
- **Fraud and regulatory compliance require screening transactions against sophisticated sets of inter-related rules.**
- **Regulatory Compliance Issues:**
  - Regulations and policies may vary on a regional basis, making accurate enforcement very difficult to maintain as regulations change over time.
  - Blaze Advisor provides the ability to quickly deploy changes to rules in order to comply with new regulations.
- **Fraud Issues:**
  - The sophistication of fraud increases over time, requiring systems that can evolve to accurately detect fraudulent transactions.
  - Blaze Advisor allows for running both analytic models and data through rules in order to make a precise and accurate fraud analysis.



# Fair Isaac EDM value-add in Teradata EDW



# EDM High-level Architecture



# ***Enterprise Decision Management – An Emerging Trend Across Industries***



- **Enterprise Decision Management is Emerging** - there is an increasing need to automate and improve decisions across the Enterprise.
- **Real Value and Benefits** - Businesses have the opportunity to drive significant strategic, revenue and cost benefits through Enterprise Decision Management.
- **Leading Technology and Solutions**- Fair Isaac provides a complete decisioning software product line, combining sophisticated analytic modeling, business rules and business control capabilities to provide the precision, consistency and agility required to manage decisions across the enterprise.
  - Unique, integrated solution for business decision automation.
  - Provides a high ROI on enterprise data warehouse investment.



## Contact and more information



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