Translating Strategic Objectives into Individual Decisions

The Emerging Landscape of Decision Optimization

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Session: UND-1

AGENDA

- **Three Key Insurer Challenges**
- How Decision Analytics Can Help
- Pricing Optimization Case Studies
- Insurance Industry Demonstration
- Conclusion

Three Key Insurer Challenges

1. How do you translate high-level goals into individual decisions?
   - Trade-off between competing business goals and objectives
2. How do you account not just for what a customer is, but what a customer will do?
   - Your decisions affect consumer choices and behaviors
3. How do you create strategies known to be optimal?
   - Your opportunities to experiment in-market are limited

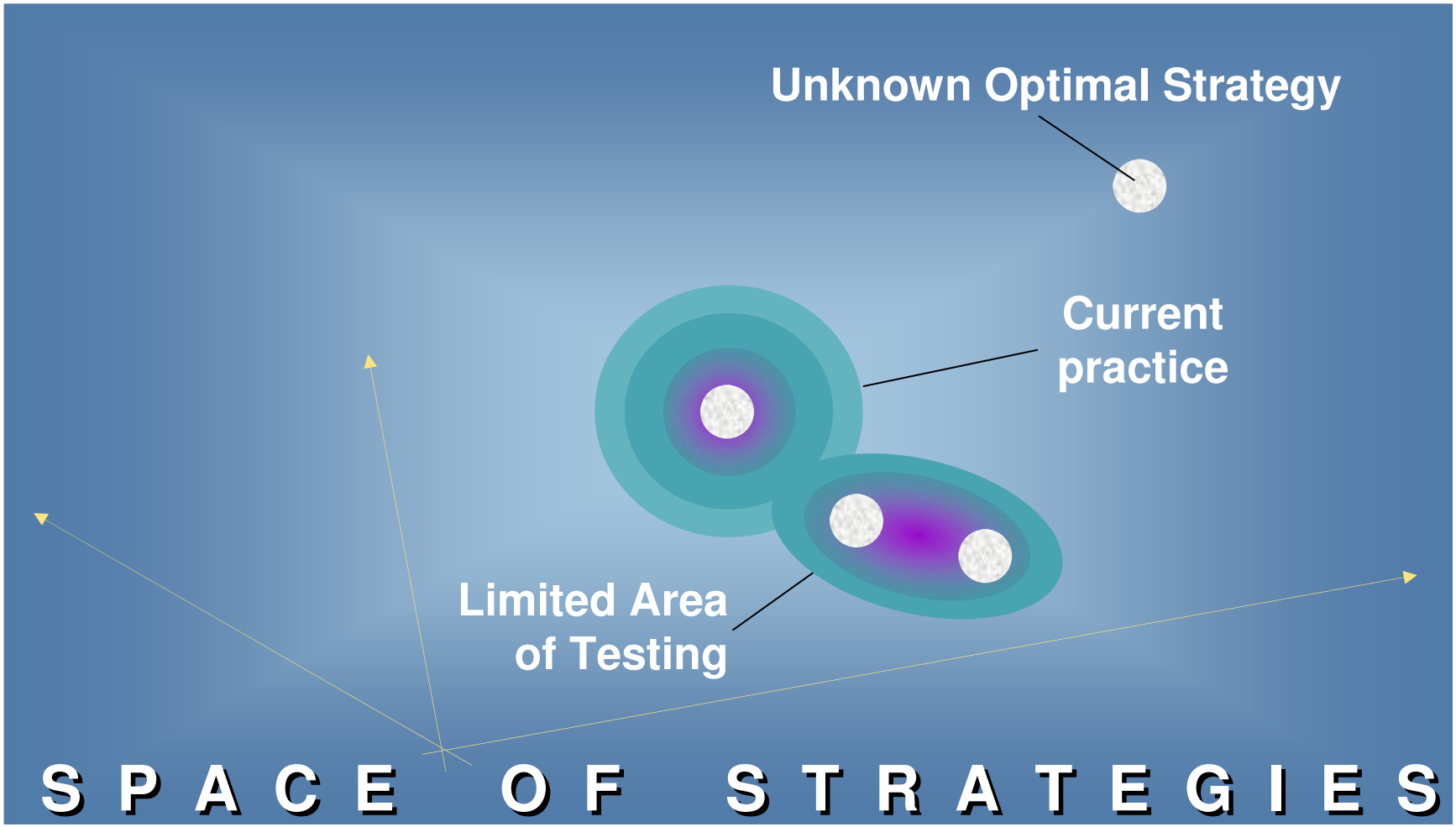
Three Key Insurer Challenges
High-Level Goals → Individual Decisions

- Competing goals and decisions
  - **Growth**
    - "We need to grow business in this region by 5% . . ."
    - "Maybe we should lower our underwriting standards?"
  - **Risk**
    - "We need to keep the combined ratio below 98% . . ."
    - "Maybe we should raise our underwriting standards?"
  - **Speed**
    - "We need to manually underwrite less than 30% of policies . . ."
    - "Maybe we should simplify our underwriting standards?"
  - **Lifetime Value**
    - "Our retention rate needs to be above 90% . . ."
    - "Maybe we should extend our underwriting standards?"
  - **Market share, distribution, etc.**

Three Key Insurer Challenges
What Customer Is → What Customer Does

- Standard customer models
  - Reflect a static, historical set of circumstances
    - Response and conversion models
      - Limited to specific past offers, channels and interactions
    - Retention models
      - Limited to specific prior customer management behaviors
    - Risk models
      - Limited to specific historical customer product choices
- With different conditions, what would a customer do?
  - Move from customer actions to customer reactions
  - Insurer actions affect consumer reactions

Three Key Insurer Challenges
Limited Experiments → Optimal Strategy



Three Key Insurer Challenges Real-life Questions?

Manage the Risk Portfolio

- How should we manage our distribution system in order to meet strategic objectives?
- How should we underwrite and price in various geographies in order to guarantee a strategic and risk-managed distribution of policies?
- How should we identify the appropriate offers to make to individual customers to meet both growth and risk objectives?

Improve Customer Profitability

- How can we identify how individual customers will respond to new rates in combination with competitive pricing?
- How can we offer individual customers the “right” package of policies, products and services to increase retention and lifetime value?

Respond To Competition

- How can we resist “following” the competition and focus on profitable customers who are tempted?
- How can we communicate to the organization the actions required to offset a competitive lower price?

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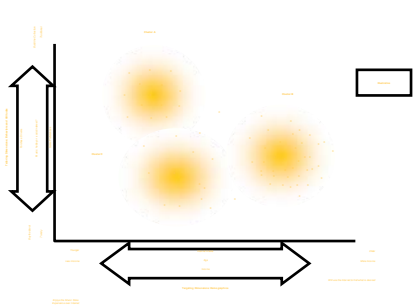
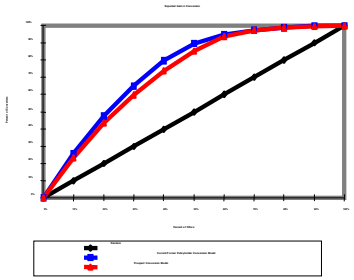
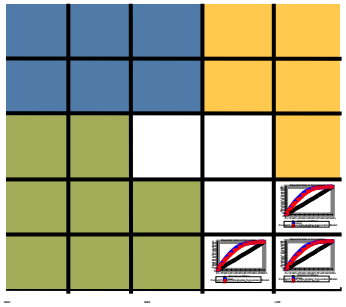
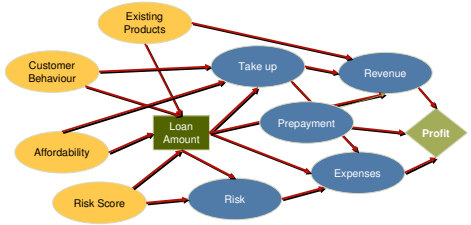
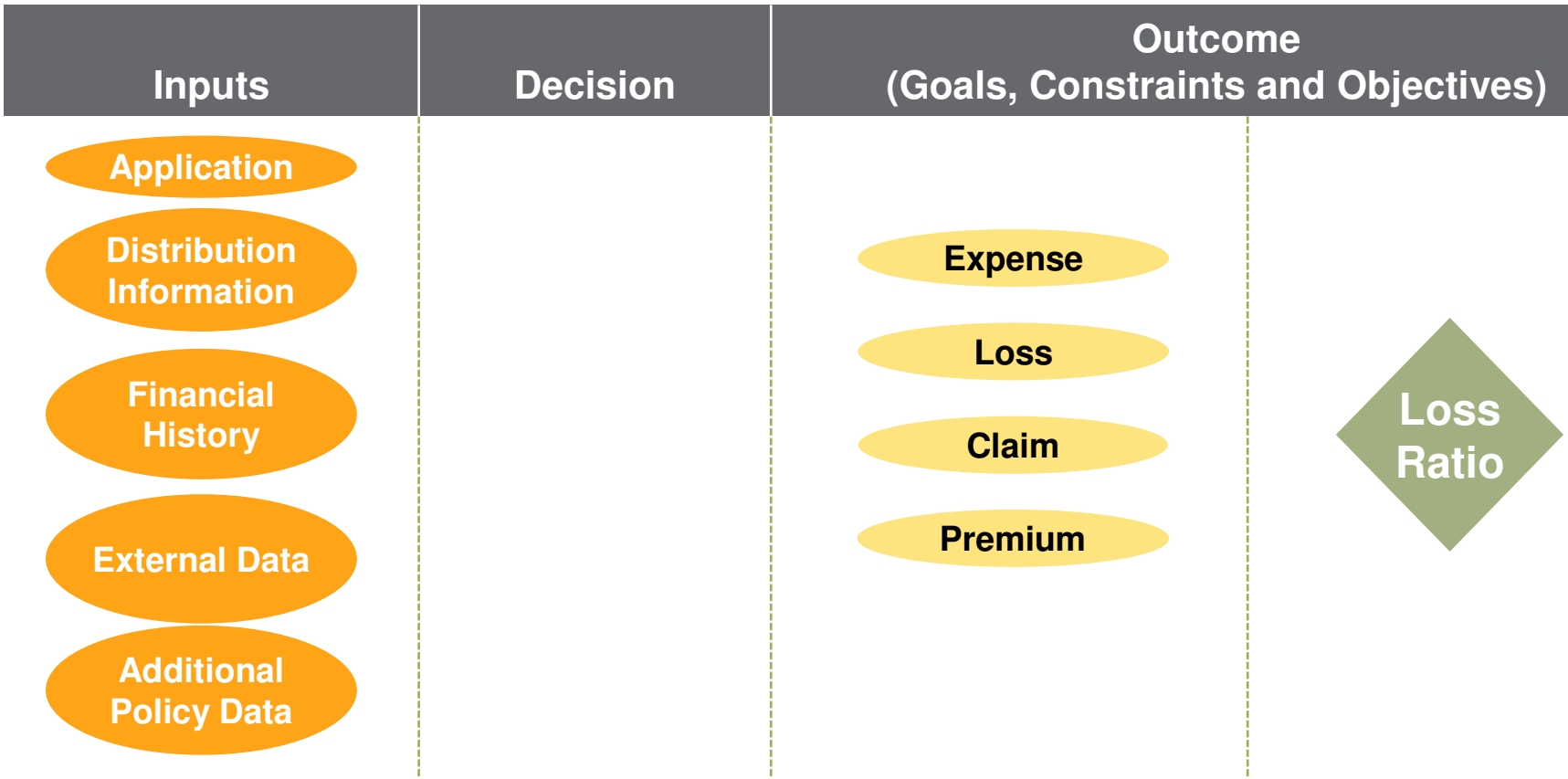
Analytical Approaches Have Evolved To Better Meet Insurers' Needs

Profiling & Segmentation	Predictive Models or "Scores"	Multi-Dimensional Trade-Off Assessment	Decision Analytics
			
Benefit			
• Establishes broad segments based on customer profile data	• Rank-orders prospects on a single dimension	• Creates micro segments by matrixing 2 or 3 predictive models	• Brings all predictive analytics into a single decision framework • Assigns the optimal action for each prospect/account given specific business constraints

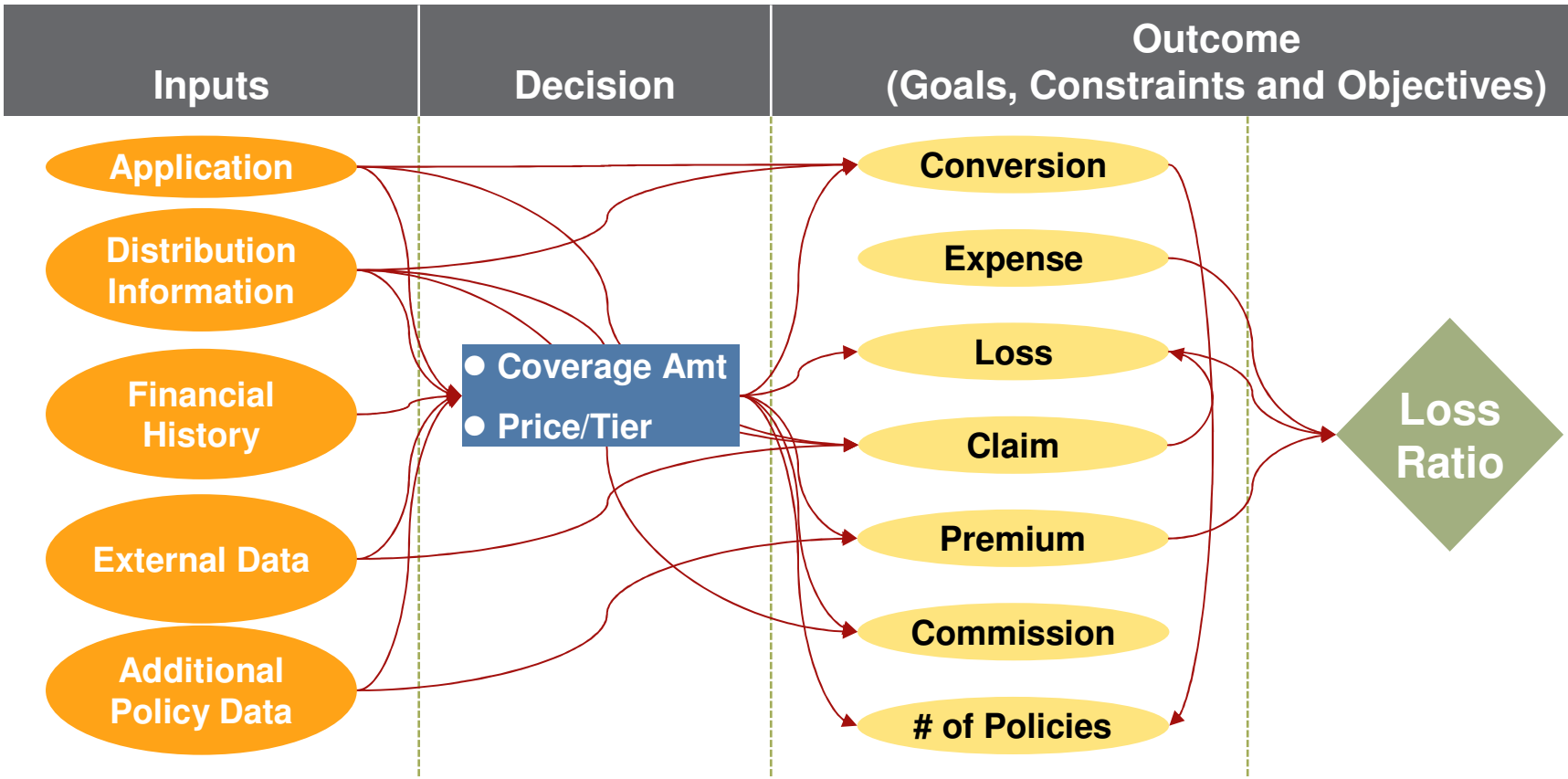
Taking predictive analytics and business rules beyond the calculation of a score to the optimization of a decision

Role of Analytics
Current State: Prediction of Risk



- Limited set of predicted outcomes
- Few degrees of freedom in your decision making

Role of Analytics
Beyond Predictions → Decision Analytics

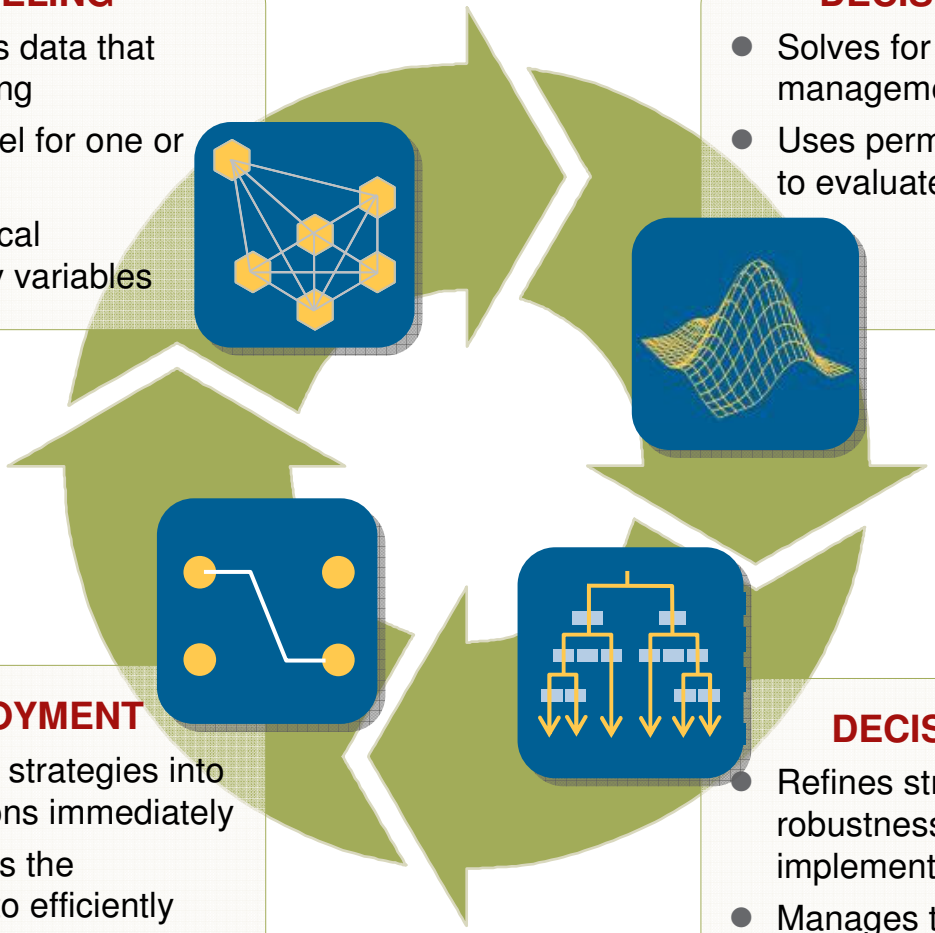


- Explicit modeling of your available decisions
- Broader set of outcomes, constraints and objectives considered

Decision Modeling
Four Key Steps

DECISION MODELING
- Evaluates and monitors data that would impact decisioning
- Builds a graphical model for one or more decisions
- Establishes mathematical relationships within key variables

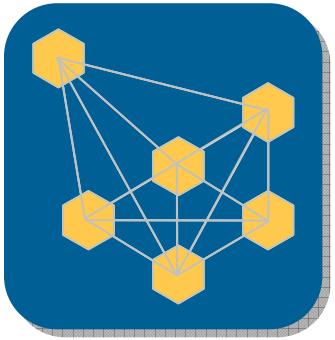
DECISION OPTIMIZATION
- Solves for profit-improvement risk management strategies
- Uses permutations on key constraints to evaluate alternatives



DECISION DEPLOYMENT
- Incorporates optimized strategies into core processing solutions immediately
- Manages and maintains the decisioning strategies to efficiently respond to market demands and changes

DECISION REFINEMENT
- Refines strategies for interpretability, robustness and ease of implementation
- Manages the portfolio of risks along different dimensions and alternative levels of detail

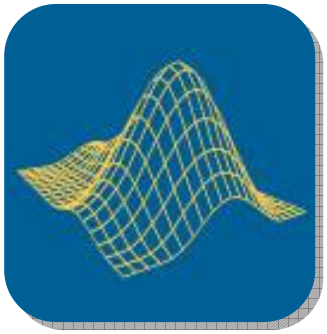
Model The Decision



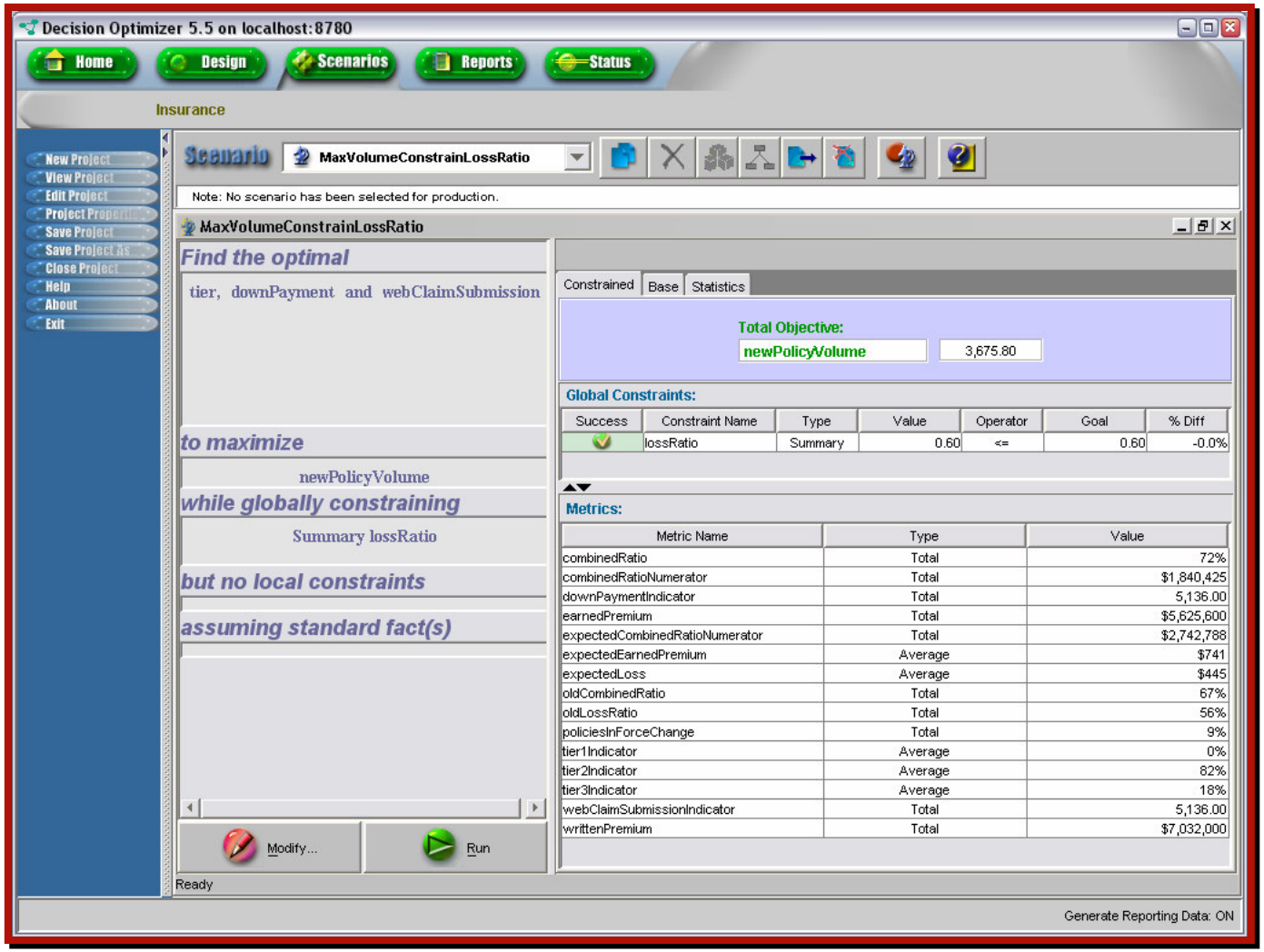
Same customer profile receiving different treatments result in different consequences for your business.

Action		Customer	=	Reaction
Policy: Coverages A Price Tier 1	→	*Insurance Credit Score = 640* *# of Drivers = 1* *Vehicle type = Sedan* *Agent #360* *1 speeding violation …*	→	*E(Loss) = $1000* *P(Conversion) = 80%* *Premium = $750* *…*
Policy: Coverages F Price Tier N	→	*Insurance Credit Score = 640* *# of Drivers = 1* *Vehicle type = Sedan* *Agent #360* *1 speeding violation …*	→	*E(Loss) = $1200* *P(Conversion) = 60%* *Premium = $1000* *…*

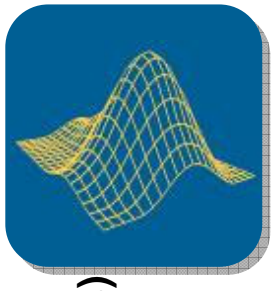
Simulate Decision Strategies
Find Optimal Approach



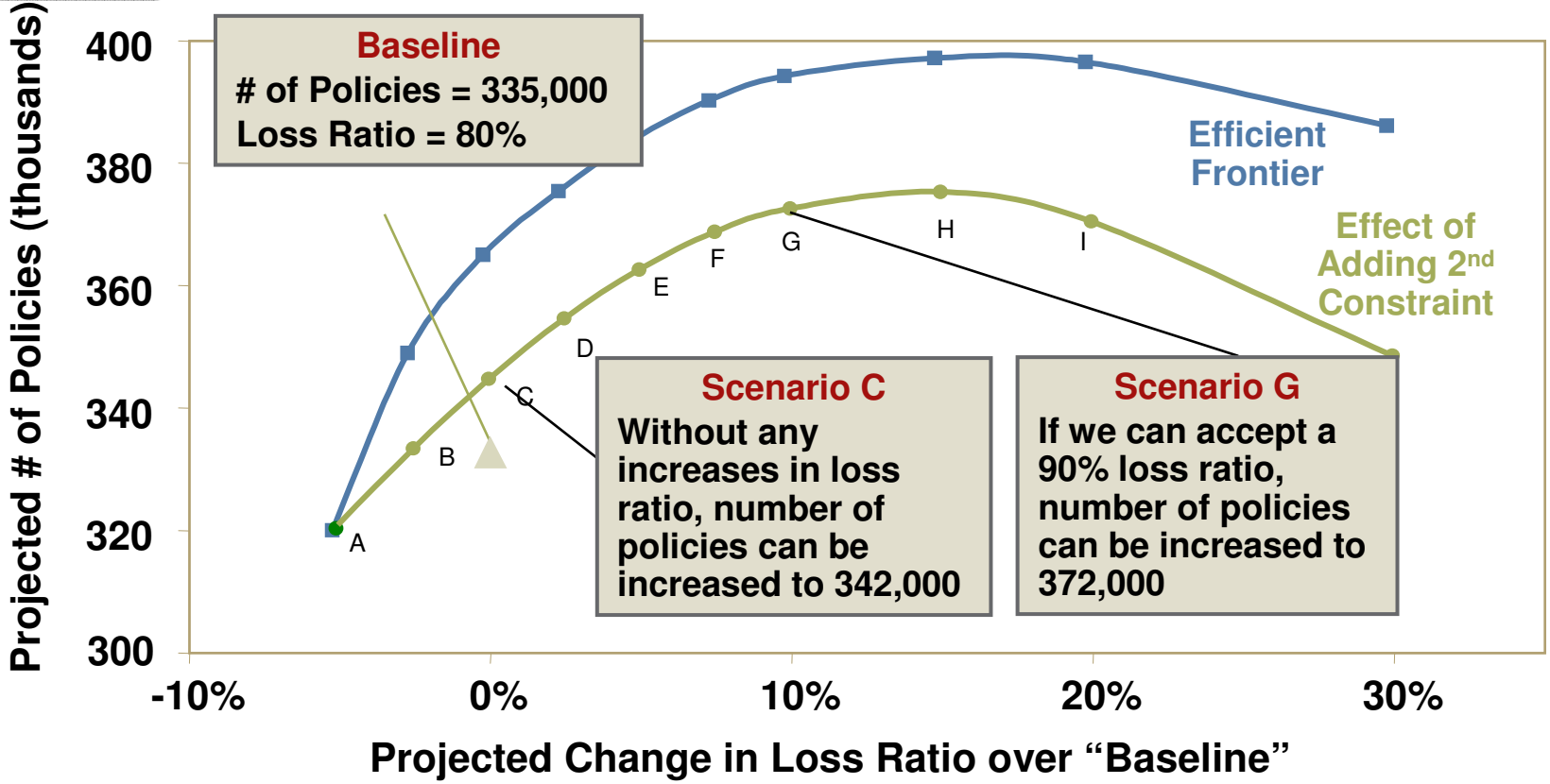
Test business scenarios in your analytic environment <u>before</u> you deploy them in the market.



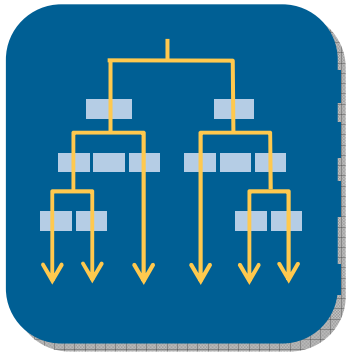
Efficient Frontiers
Visibility to Business' Key Metrics

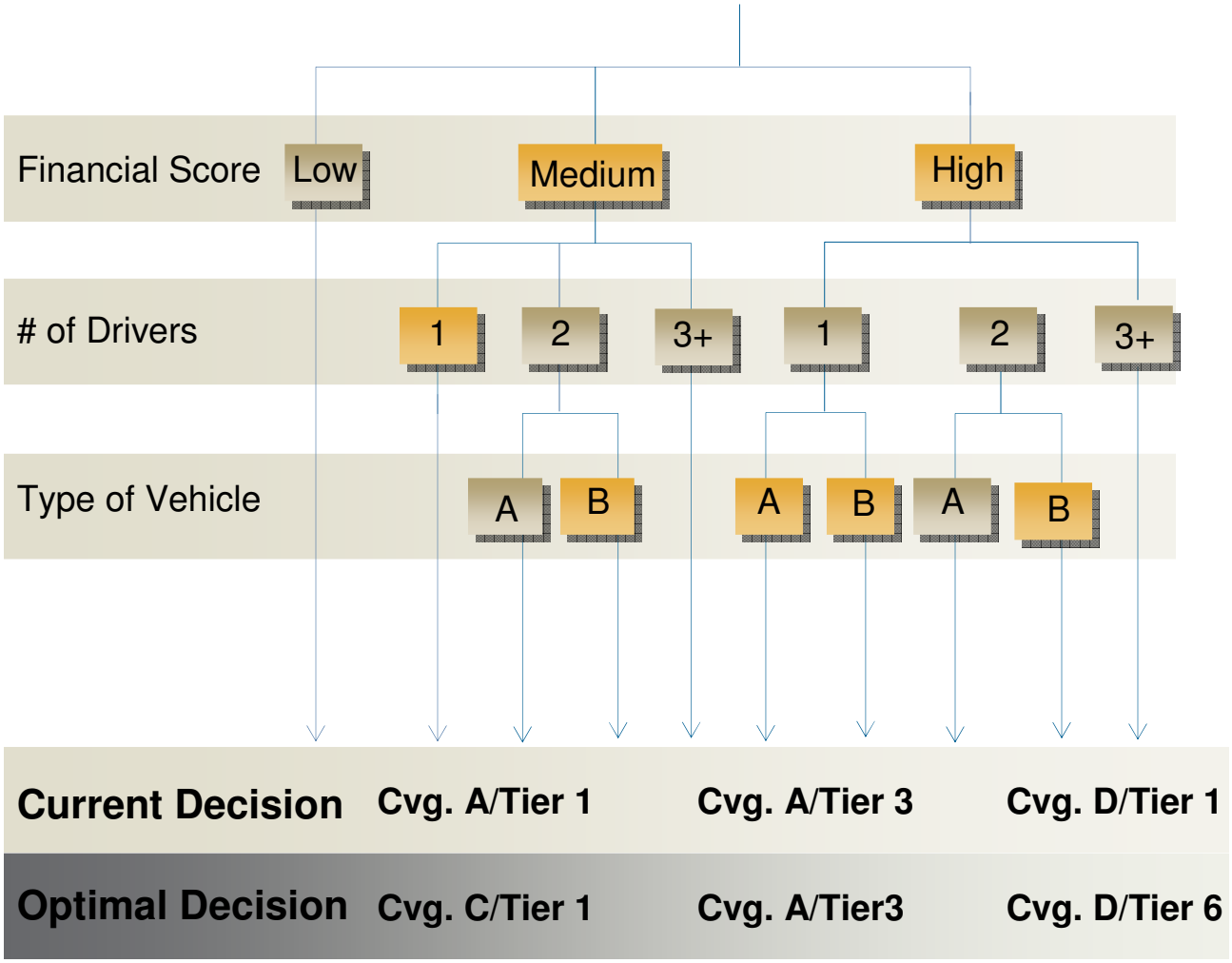


EFFICIENT FRONTIER
Projected Consequences for Multiple Scenarios

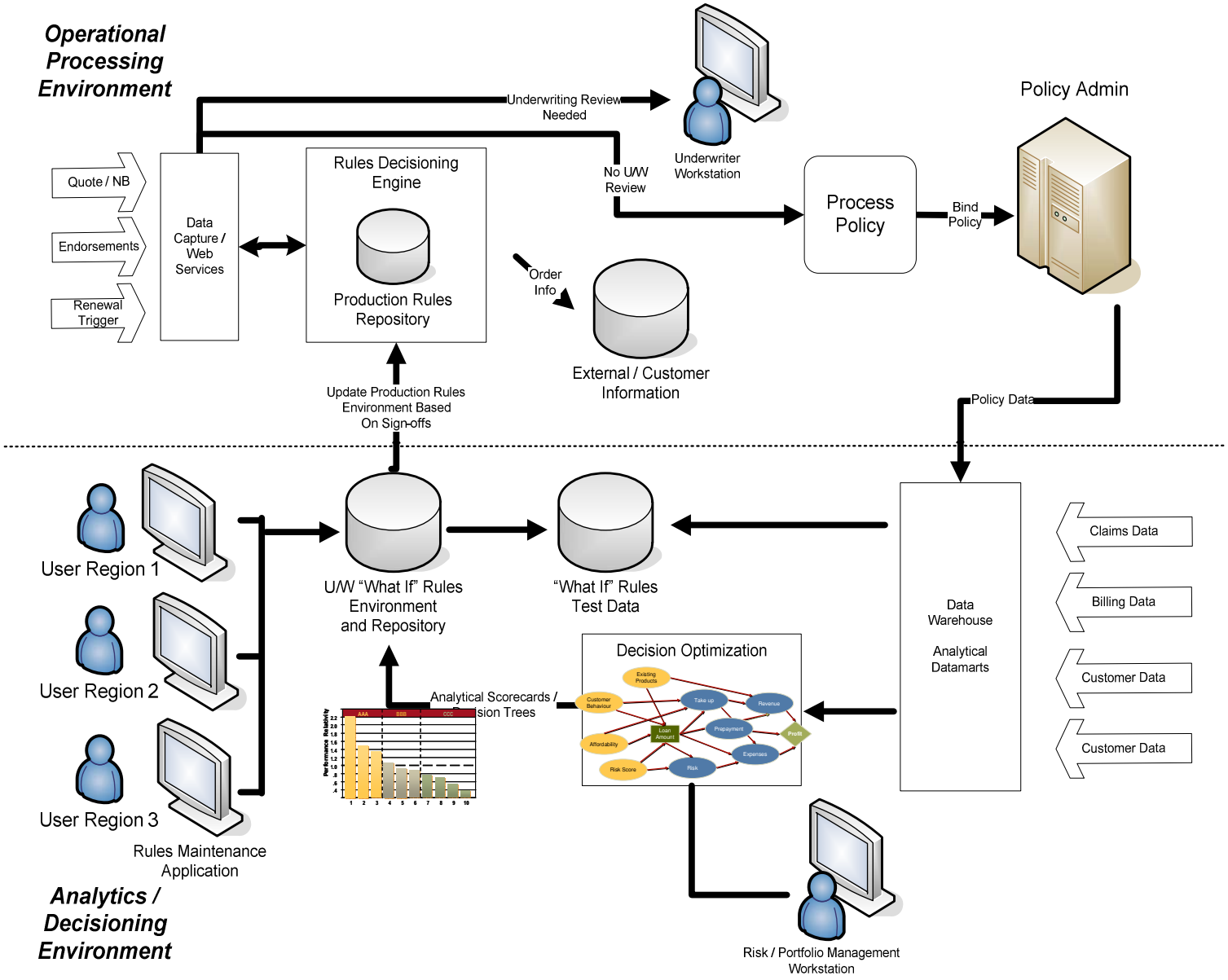


Refine Strategy Implementation
Interpretability, Ease and Compliance





Insurance Decisioning Environment
Using Fair Isaac Technologies



Decision Analytics
Supporting Technologies

	Technology	Description	Uses
Modeling, Optimization, and Refinement	**Model Builder**	• Analytics for forecasting future individual behavior • Utilizes analytics to define decision trees that optimize the strategy that has been chosen	• Improve risk assessment of customers • Target marketing opportunities • Improve use of information in portfolio management
	Decision Optimizer	• Analytic techniques for identifying best actions or treatments to meet objective under constraints • Simulates offerings to align decisioning with organization strategies	• Design strategies that increase profit, response, other key metrics • Manage the portfolio of risk at a local market or agency level
Deployment	**Blaze Advisor**	• Software for defining, testing and executing rules, processes and strategies	• Make instant, consistent decisions in real time, across the enterprise

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Pricing Optimization
Address Pricing as Intro Rates Expire

- Client: A top 10 bank and credit card issuer
- Business Problem: Declining balances as intro rates expire

  Determine optimal marketing offer to retain customers and stimulate balances:
  - Price reduction
  - Line increase
  - Product upsell
- Results:
  - Identify consumers who respond most to price reduction offers while keeping re-priced balances to a minimum
  - 12% increase in purchase activation and 7% increase in profit in 12 months

Pricing Optimization
Address Pricing Sensitivity in a Retention Call Center

- Client: A top 5 US credit card issuer
- Business Problem: Inbound retention call center

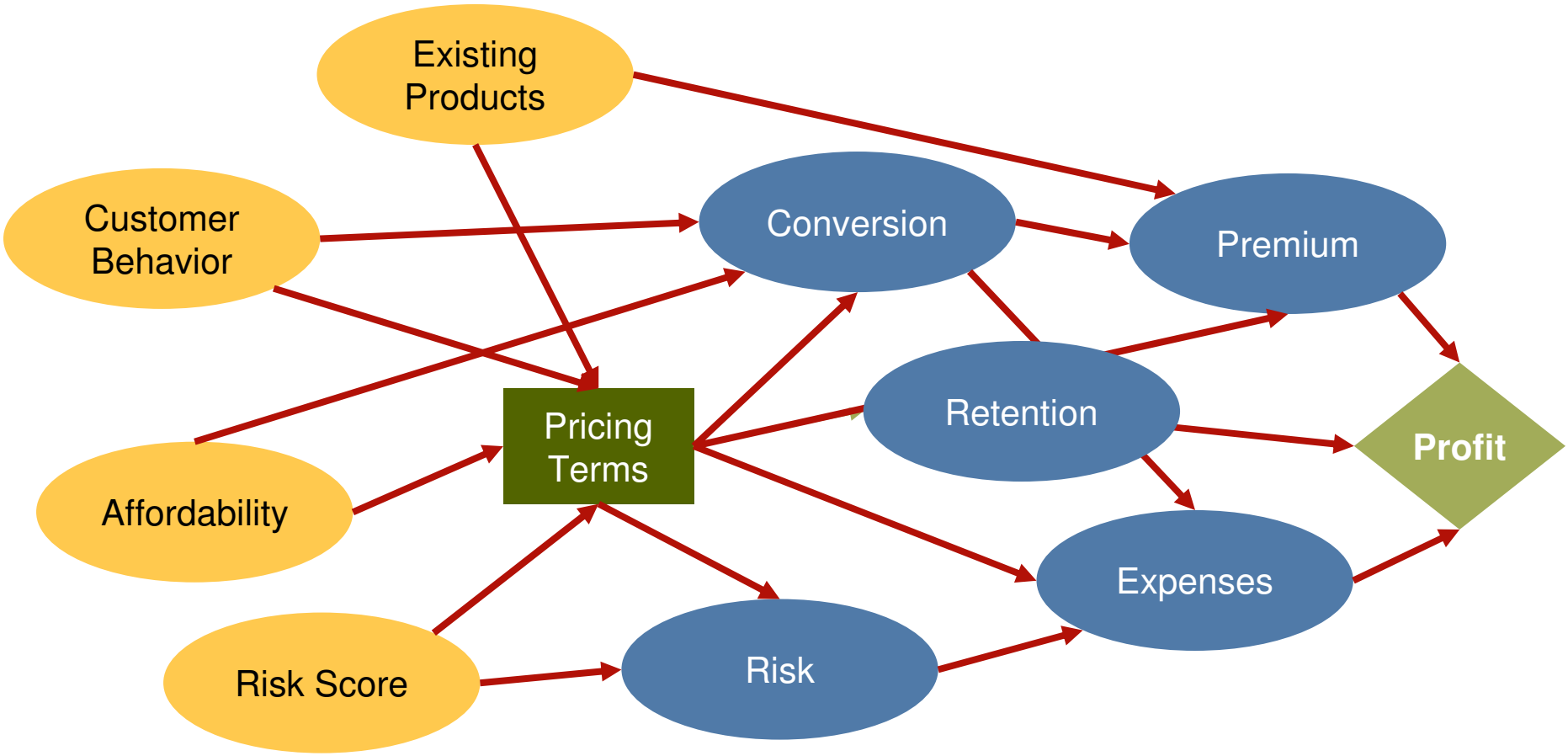
  Balance customer retention re-pricing with:
  - Balance Build
  - Yield
  - Risk
- Results: Identify different levels of price sensitivity within segments of customers
  - Understand balance build/profit trade-off
  - Identify opportunities to increase wallet share
  - Increase profitability by nearly $100 per account in segments with high price sensitivity and yield potential

Pricing Optimization
Optimize Installment Loan Offers - Price and Amount

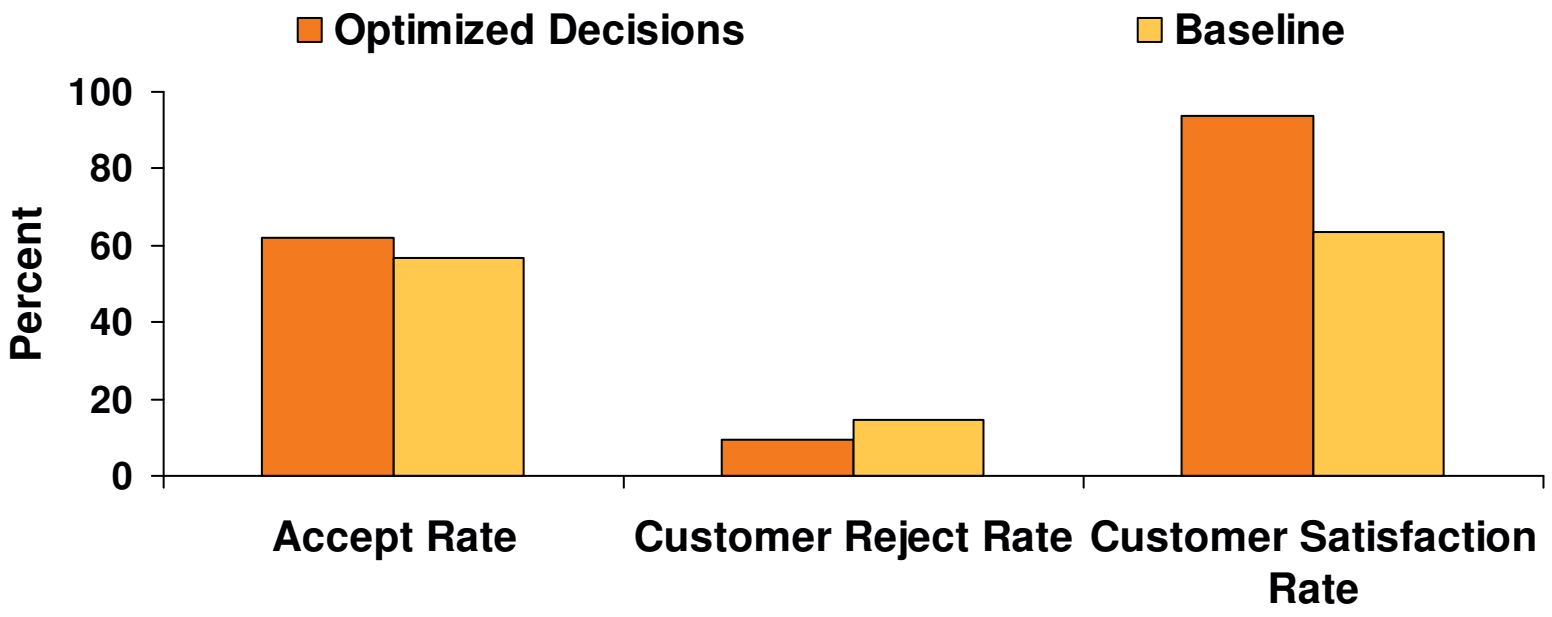
- Client: A full-service retail bank in the UK
- Business Problem: Improve loan profitability by optimizing
  - Who to target for a loan product
  - Loan amount
  - Loan price

  While meeting other key business metrics:
  - Maintain acceptance rates
  - Increase loan take up rates and insurance take up
  - Maintain or reduce losses and bad rates
  - Meet regulatory requirements on pricing and loan amounts
- Results: 20% profit improvement after 5 months, expected 60% profit improvement over life of loan, while maintaining bad rates, losses and acceptance rates

Pricing Optimization
Decision Analytics and Optimization



Pricing Optimization
Improved Customer Experience



Higher volumes of booked loans…

…with fewer customers choosing competitor's offer…

…and more customers' requested loan amounts granted…

…while, lowering risk

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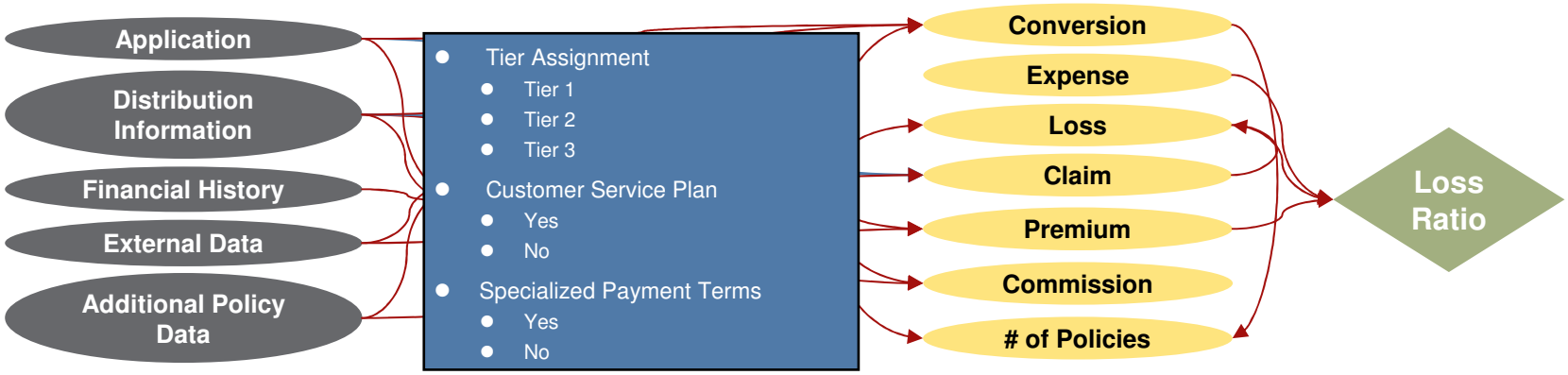
Demonstration: Develop & Deploy Strategies for Quoting Auto Policies

- Situation
  - Annual growth in Policies in Force is declining below the 5% goal
  - The primary driver of this is low conversion rates for agents in regions that are facing strong competition
- Action Plan
  - Focus on new auto policy quotes
  - Develop new strategies for assigning prospects to tiers while accounting for local market conditions
  - Efficiently allocate a limited number of offers for flexible payment terms and customer service terms to differentiate products and improve conversion

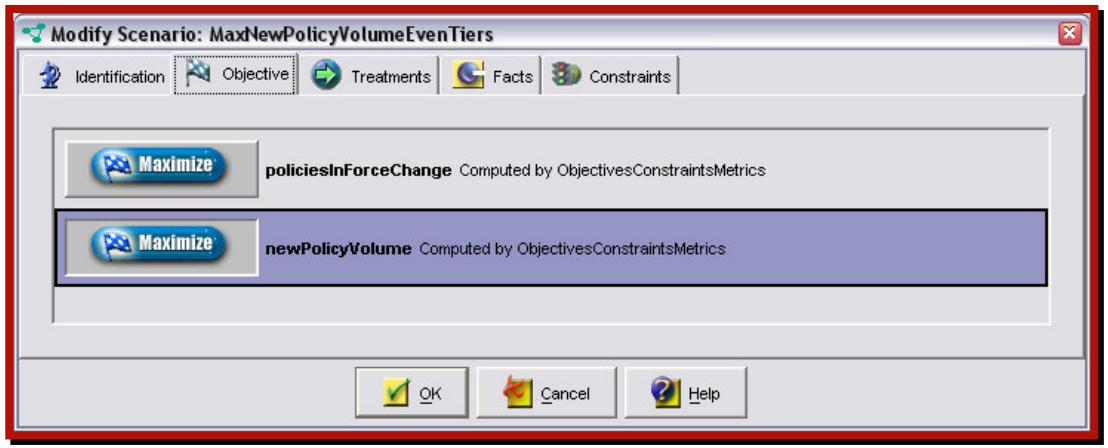
More Competitive Strategies
Linking Decisions to Business Goals

- Business Goals
  - Grow the number of Policies in Force
    - Keep annual growth above 5%
  - Maintain profitability
    - Keep the Combined Ratio within strategic guidelines
  - Understand the trade-off between growth in policies and combined ratio
- Decision Alternatives
  - Tier Assignment: Preferred (Tier 1), Standard (Tier 2), Non-Standard (Tier 3)
  - Specialized customer service plan (offer/no offer)
  - Specialized payment terms (offer/no offer)

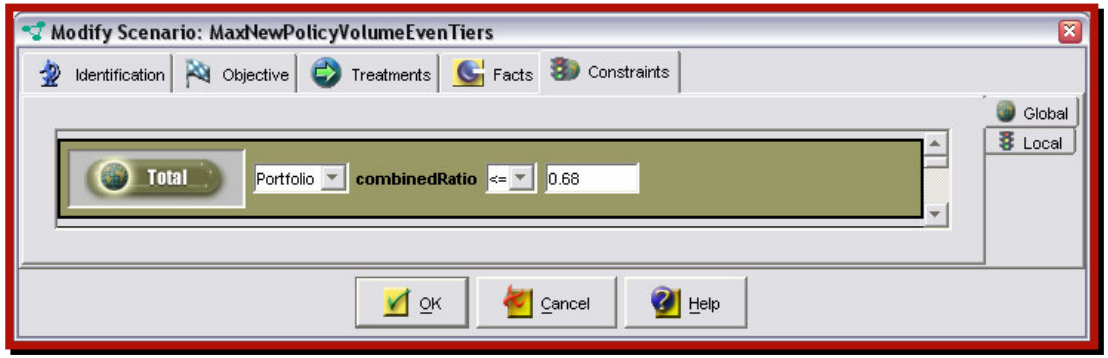


Demonstration
Step 1: Configure Optimization Scenario

- Maximize New Policy Volume

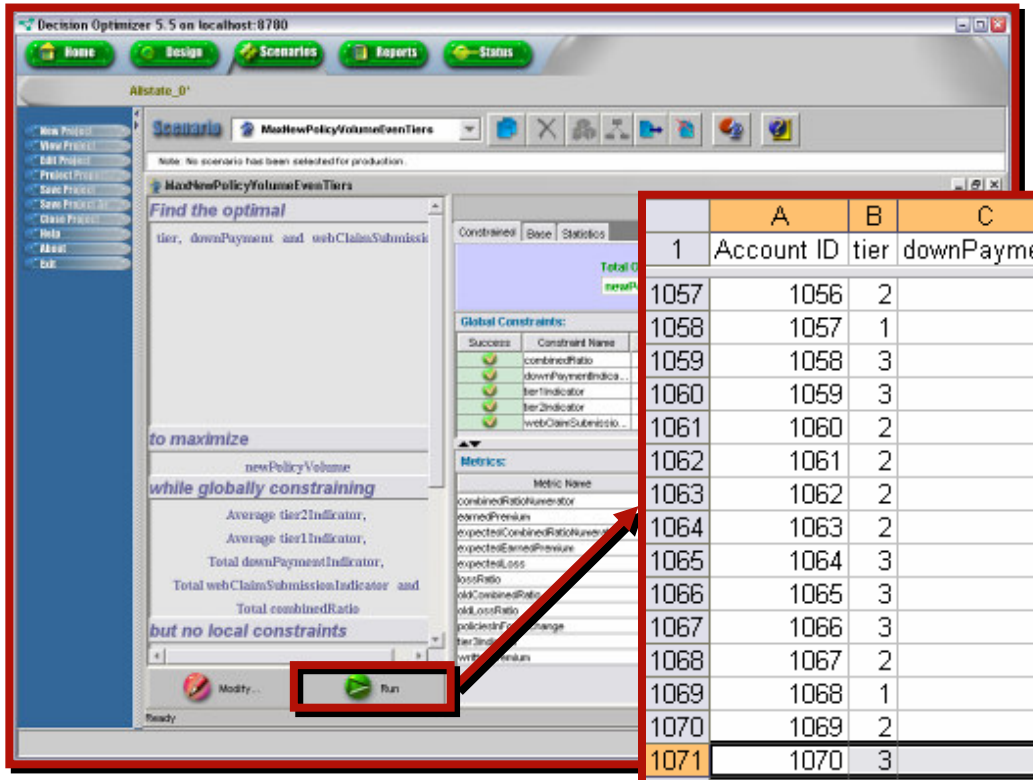


- Maintain the Combined Ratio



Demonstration
Step 2: Optimize the Actions

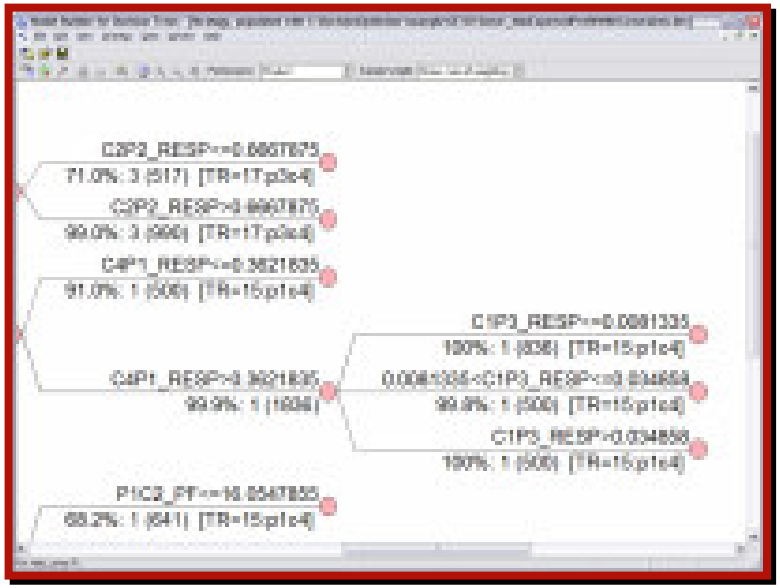
- For each prospect in the historical data
  - Simulate the effect of all potential actions on the new policy volume and combined ratio
  - Pick the best decision

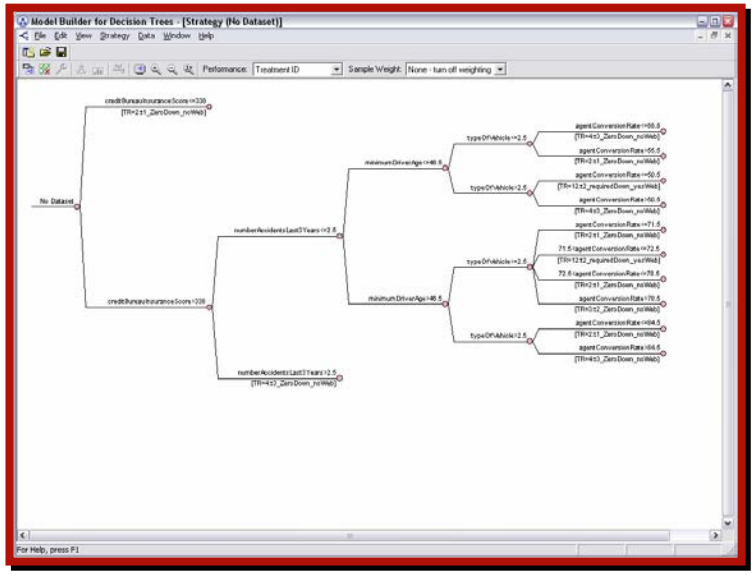


	A	B	C	D
1	Account ID	tier	downPayment	webClaimSubmission
1057	1056	2	0	0
1058	1057	1	0	0
1059	1058	3	0	0
1060	1059	3	0	0
1061	1060	2	0	0
1062	1061	2	0	0
1063	1062	2	0	0
1064	1063	2	0	0
1065	1064	3	0	0
1066	1065	3	0	0
1067	1066	3	0	0
1068	1067	2	0	0
1069	1068	1	0	0
1070	1069	2	0	0
1071	1070	3	1	1
1072	1071	1	0	0

Demonstration
Step 3: Implement Rules into Operation

- Finalize Decision Management Optimization
- Deploy Optimized Decisions Through Blaze Advisor Rules





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Conclusions

- In order to compete, insurers must be able assess individual decisions in relation to larger strategic goals
  - Multiple objectives, constraints and metrics
- Decision Analytics extends the evolution of analytic techniques
  - Predictive analytics allows for strong control of metrics
  - Decision analytics allows for making tradeoffs across multiple goals and constraints in order to create value
- Make more informed decisions around strategic goals
  - Brings greater visibility, understanding and control to the decision
  - Use the Efficient Frontier to make clear business trade-offs
  - Communicate those goals – and what they mean – to the organization
- Other potential decision areas
  - Marketing, Policy Management, Channel Distribution, etc.

THANK YOU

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