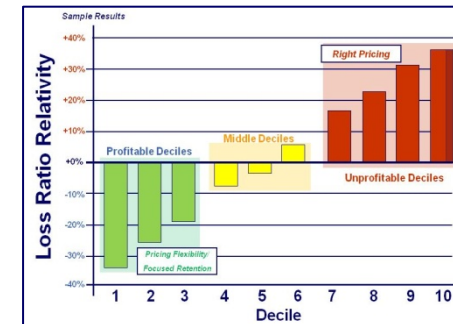




Predictive Analytics in the P&C Industry

Mo Masud – Deloitte Consulting, LLP

Tuesday October 5, 2010
9:45 am – 10:45 am



Discussion Topics

Session Objectives

Predictive Analytics – A Brief Primer

Industry Best Practices – A Commercial Lines Study

Emerging Trends and Applications

Becoming a Predictive Analytics Enabled Organization



Session Objectives

Objectives

- As the use of predictive analytics in the P&C industry continues to mature, market leaders will be those companies that have fully integrated and deployed predictive models within their business process and IT infrastructure and have incorporated predictive analytics into a broader business analytics initiative. The use of predictive analytics in pricing and underwriting is no longer a nice to have but a pre-requisite to complete and differentiate in the volatile P&C industry. Predictive Analytics is quickly emerging as an enterprise wide initiative supporting multiple business objectives.

Discussion Themes

- A high-level overview of predictive analytics for personal and commercial lines
- Review and discuss the evolution of predictive analytics and discuss industry best practices for predictive analytics and development across four dimensions: strategy, modeling, technology and process
- Examine emerging trends in predictive analytics including new applications, integration with business rules, performance metrics and enterprise decision management
- Review the steps to becoming a predictive analytics enabled organization and how predictive analytics should be incorporated into a broader enterprise decision management strategy

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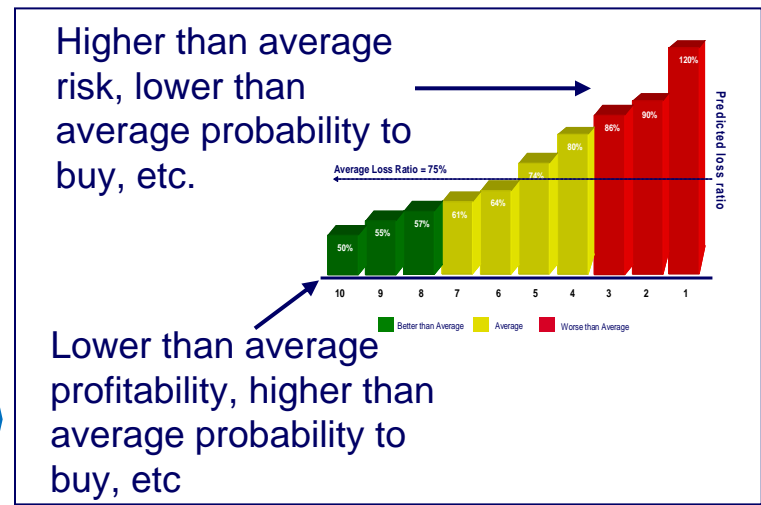
Predictive Analytics – A Primer

Predictive analytics development applies mathematical and statistical techniques to statistically predict future outcomes and improves the overall ability to segment a population on the basis of a future probability or outcome.

Predictive analytics

<p>An objective approach to analyze risk</p>	<ul style="list-style-type: none"> Limits subjective reasoning from underwriting operations and risk assessment through use of mathematical and statistical techniques Leverages internal and external data to segment individual customers Creates opportunities to enhance traditional business processes Improves insights into risk characteristics that are predictive of a future actionable outcome
<p>A tool to allow increased efficiency and to gain insight</p>	<ul style="list-style-type: none"> Can allow for increased amount of “no touch” and “low touch” customers Provides objective guidance for more efficient and consistent allocation of resources Opens the door for new insights into risk characteristics of customers
<p>A means to an end</p>	<ul style="list-style-type: none"> The predictive model itself only delivers the relative risk index for a customer The rest of the value to be obtained from the predictive model comes from careful implementation of model results into business processes and systems

Sample lift curve



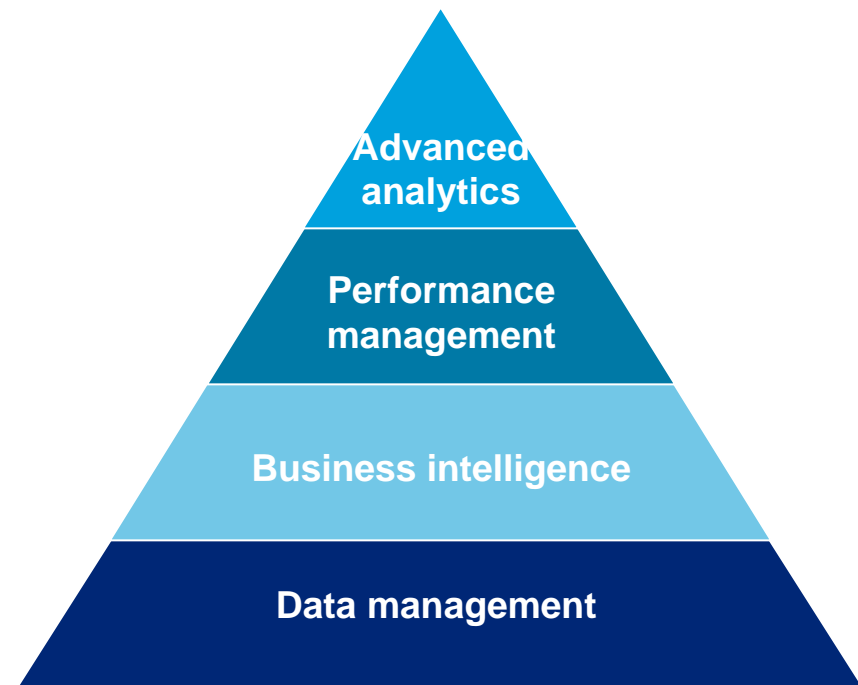
The solution can support important business decisions and can yield increased efficiency across the full spectrum of risk or customer base

Predictive Analytics – A Primer

Predictive analytics is part of a broader business analytics strategy that combines data management, business intelligence, performance metrics and advanced analytics.

Business Analytics is the practice of using data to drive business strategy and performance. It includes a range of capabilities – from looking backward to evaluate what happened in the past, to forward-looking approaches like scenario planning and predictive modeling. It spans the capabilities stack from data management and business intelligence up through performance management and advanced analytics.

A common and effective use of business analytics is to deliver uncommon insights that can drive business value. That starts with asking the right kinds of questions – and ends with getting answers you can trust.



Predictive Analytics – A Primer

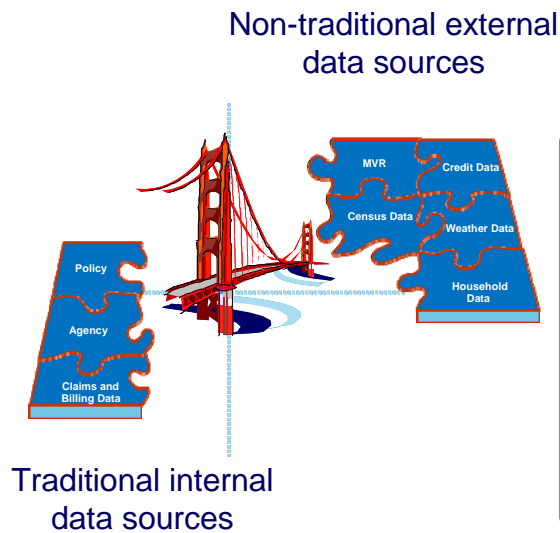
Predictive Analytics Business Applications



Predictive Analytics – A Primer

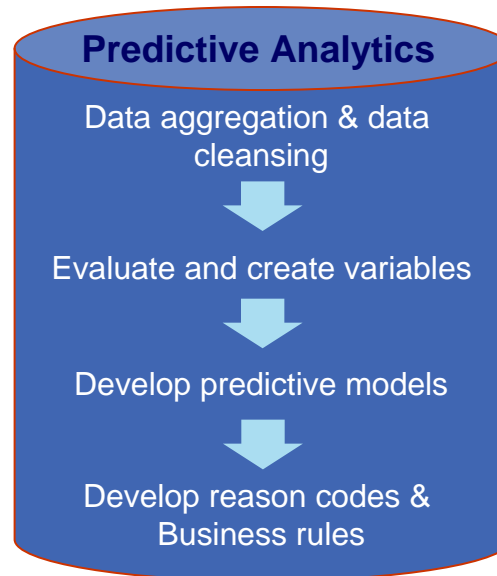
Predictive Analytics Development and Deployment

Innovative data sources



Non-traditional data sources unleash new risk characteristics into the predictive analytics process

Advanced data analytics Segmentation analysis



Building and deploying predictive analytics requires a specialized combination of skills covering data management, data cleansing, data mart construction, statistical analysis, data mining and modeling, and strategy, business processing and technology

Business implementation

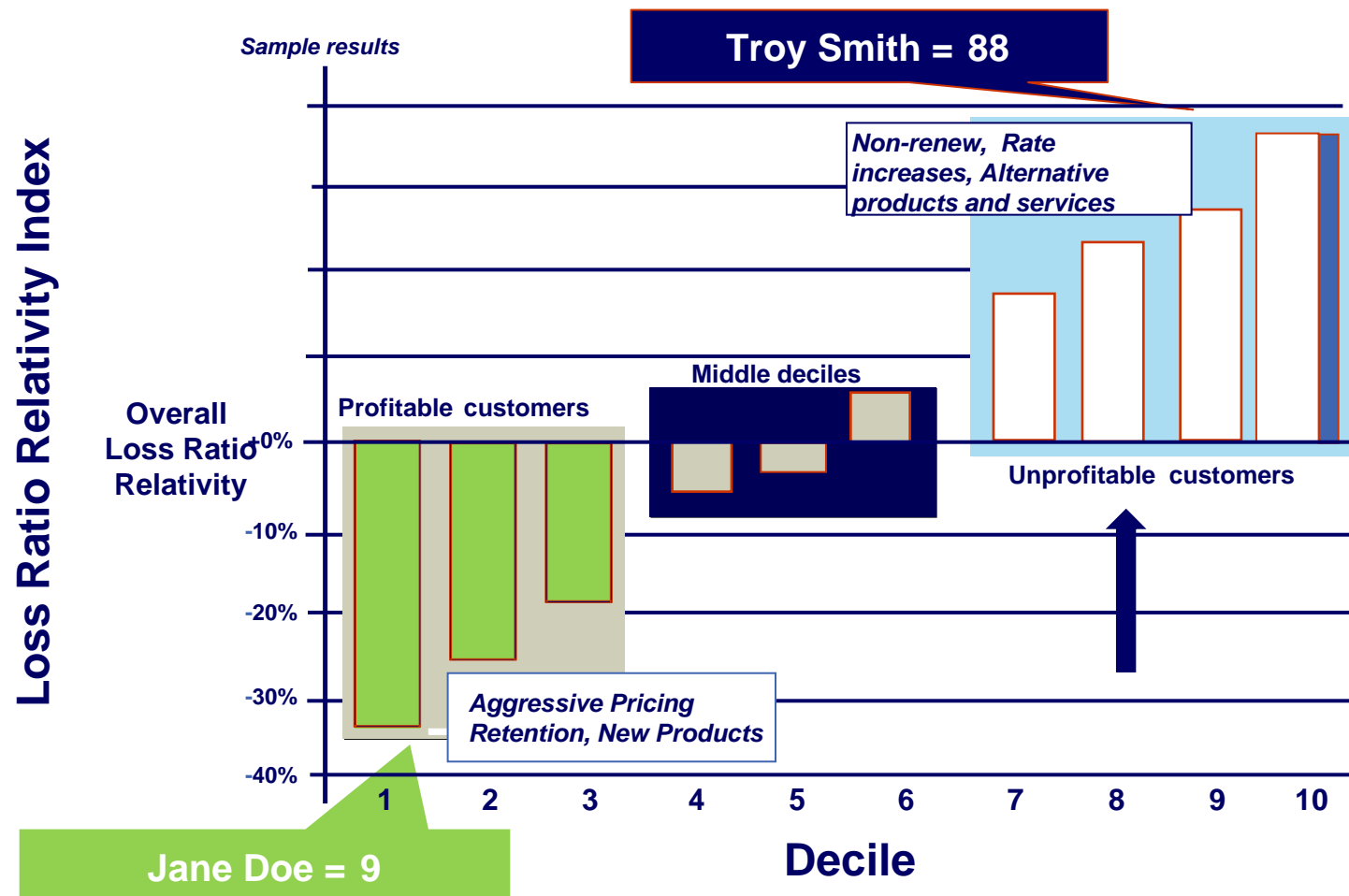
Resulting programs:

- Pricing
- Risk selection
- Underwriting
- Retention and loyalty
- Sales force effectiveness
- Claims
- Loss Control
- Fraud/ Premium Audit

Predictive analytics results are used to align various business strategies and operations based on the insight gained from improved segmentation of customers based on a future actionable outcome

Predictive Analytics – A Primer

Predictive Analytics solutions are designed to segment a population to prospectively act on a positive or adverse outcome that will occur in the future. Determining the actions to take on each of the segments based on predicted outcome is how companies can realize benefits.



Predictive Analytics – A Primer

Business Drivers for Predictive Analytics in the P&C Industry

Impact of the Credit Crisis and Financial Industry Crisis

The financial crisis in 2008 significantly impacted investment income. Investment income is an important revenue source for insurers, often accounting for 15% to 20% or more of an insurer's total revenues historically. However the industry is doing much better than banks.

Deteriorating Underwriting Profits

The combined ratio is a key measure of underwriting performance. Insurers in an ISO study reported a combined ratio of 105.1% for all of 2008, compared with 95.5% in 2007. This is due more to the underwriting cycle than the financial crisis.

Rising Expense and Loss Costs

Loss costs and related expenses are often the largest expense item facing an insurer. Incurred losses rose 17.5% to \$287.5 billion in 2008, from \$244.7 billion in 2007.

Lack of Organic Growth

The US population remains relatively stable and the financial crisis has seen a loss of small businesses. This poses a challenge for organic growth in the industry. Economic crisis and unemployment has seen a decline in payroll affecting workers' compensation premium.

Innovative applications of Predictive Analytics can help to:

- Extend predictive analytics across the enterprise
- Data driven decision making to support pricing, underwriting, marketing and agency appointment strategies
- Integration results of predictive analytics across customer touch points and rules based decision making as part of a broader enterprise decision management strategy

The time is now for P&C insurance companies to take an enterprise view of predictive analytics



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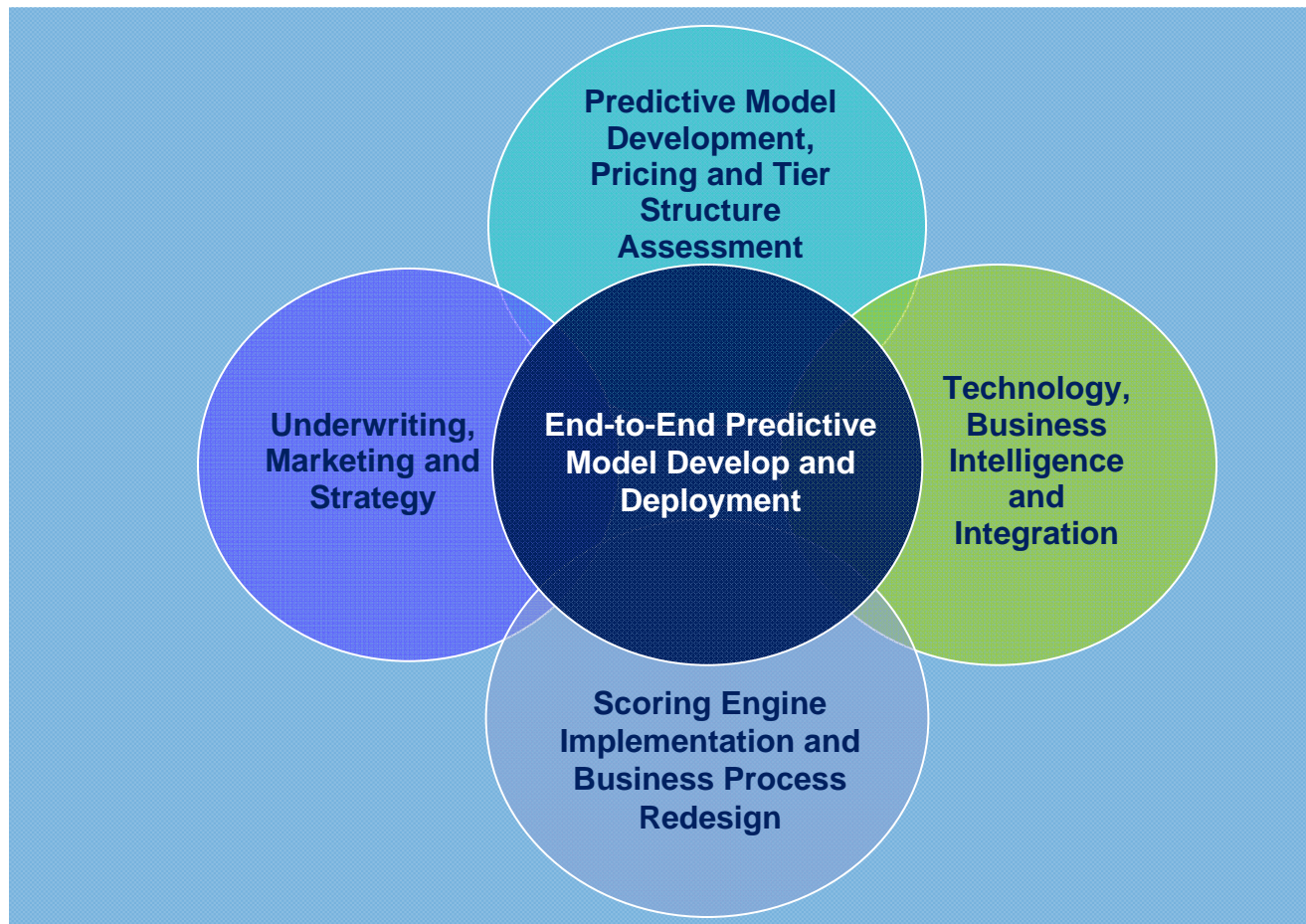
Industry Best Practices – A Commercial Lines Study

Emerging Trends and Applications

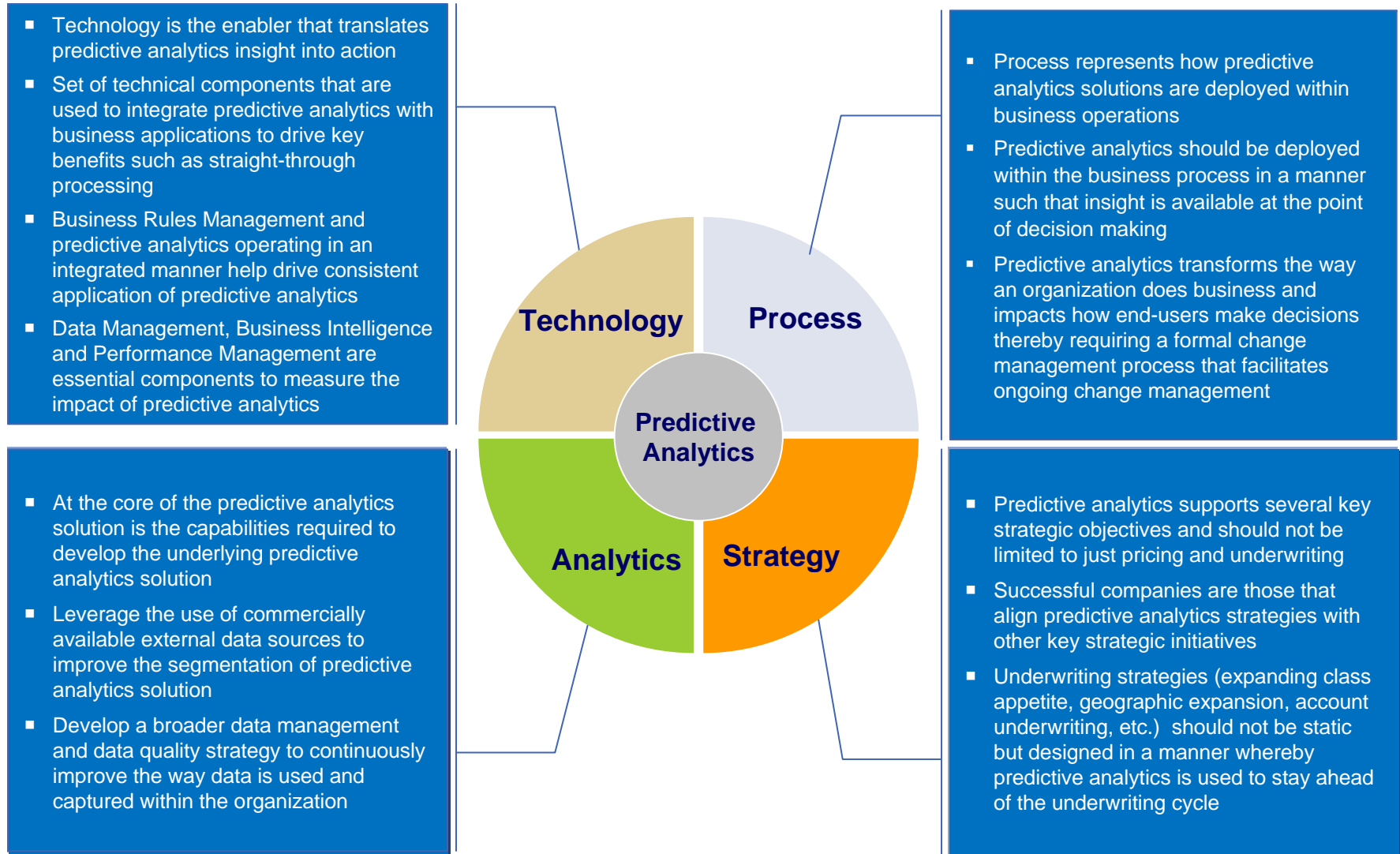
Becoming a Predictive Analytics Enabled Organization

Industry Best Practices – A Commercial Lines Study

In today's competitive market, the development and deployment of predictive analytics goes beyond an actuarial and statistics exercise. Market leaders are those organizations that take a holistic approach to predictive analytics. A fully integrated solution that supports the application of predictive analytics at the point of decision making helps bridge the gap between the slow adopters and market leaders.



Industry Best Practices – A Commercial Lines Study



Industry Best Practices – A Commercial Lines Study



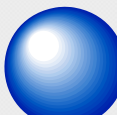

Use of predictive analytics are becoming table stakes for commercial lines companies and have been table stakes for years in personal lines. 9 of the top 10 commercial companies use predictive modeling, beginning as early as 2001. Small to mid-size firms are using predictive models to help extend their competitive advantage.

Capability Matrix – Commercial Lines Study

	Initial	Functional	Leading
Predictive Analytics	<ul style="list-style-type: none"> Predictive Analytics viewed as special project, segregated from the core insurance business 	<ul style="list-style-type: none"> Predictive Analytics extended beyond lines of business to score specific books of business (e.g., Specialty Lines, Preferred, Standard, Non-Standard) 	<ul style="list-style-type: none"> Viewed as integral part of business strategy, including comments during analyst and investor calls Continuous R&D for new data sources for competitive advantage
Technology	<ul style="list-style-type: none"> Stand-alone Predictive Analytics specifically developed to score defined books of business 	<ul style="list-style-type: none"> Predictive Analytics results integrated into specific business processes, assisting underwriting risk reviews Technology is in place to support automation and rules based decisions 	<ul style="list-style-type: none"> Highly integrated analytics functionality enables streamlined processing of underwriting functions (e.g., new and renewal business) and drives predictive modeling to the point of sale
Process	<ul style="list-style-type: none"> Manual process for new and renewal business without automated underwriting and required application of predictive analytics recommendations 	<ul style="list-style-type: none"> Integrated into the business process to support straight-through processing and automated underwriting 	<ul style="list-style-type: none"> Strategic applications such as Predictive Analytics at the point of sale, agency distribution models, elasticity demand models, and model used in M&A due diligence
Strategy	<ul style="list-style-type: none"> Typically applied to single, narrowly focused application or line of business 	<ul style="list-style-type: none"> Tactical deployment of Predictive Analytics for right pricing, renewal retention, focused non-renewals, and profitable growth 	<ul style="list-style-type: none"> Predictive Analytics serve as core competency and competitive differentiator. Data-driven decision making permeates entire organization.

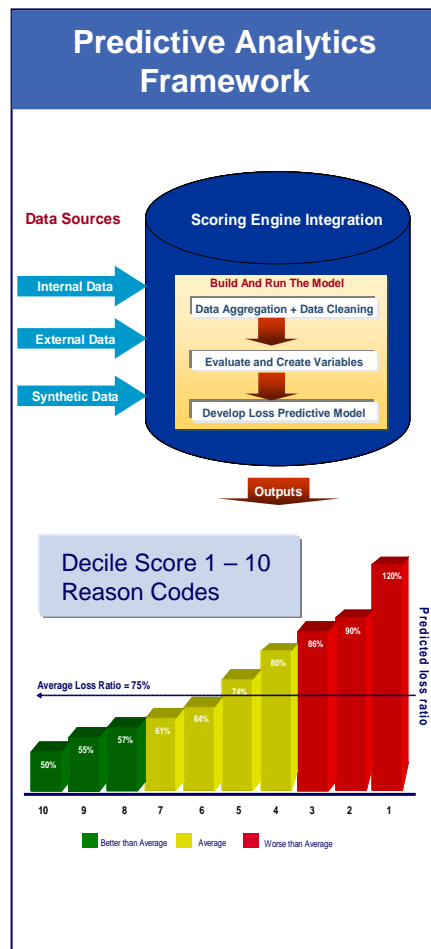
Industry Best Practices – A Commercial Lines Study

 = Where the industry currently is operating

	Initial	Functional	Leading	Leading Characteristics
Predictive Analytics				Leaders have established a large number of price points to write a wide variety of risks
Technology				Leaders devote significant resources to R&D efforts.
Process				Leaders leverage models to improve 'ease of business'.
Strategy				Leaders have easily scalable solutions and rules engines to allow agile reactions to market conditions.

Industry Best Practices – A Commercial Lines Strategy

Enterprise Wide Predictive Analytics Framework



Predictive Analytics Business Applications

Underwriting	Marketing	Claims	Agency Management	Monitoring Results
Develop predictive analytics applications that predict future loss ratio for new and renewal business policies	Develop predictive analytics applications used to identify profitable areas for growth and new agent appointments	Leverage predictive analytics outcomes to identify claims that should be triaged to the appropriate resources at the point of intake	Extend underwriting and marketing predictive analytics applications to identify new agents that will be profitable at some point in the future	Loss Ratio Retention Rate Premium Growth Customer Service Complaints

Business Rules Management to Drive Decision

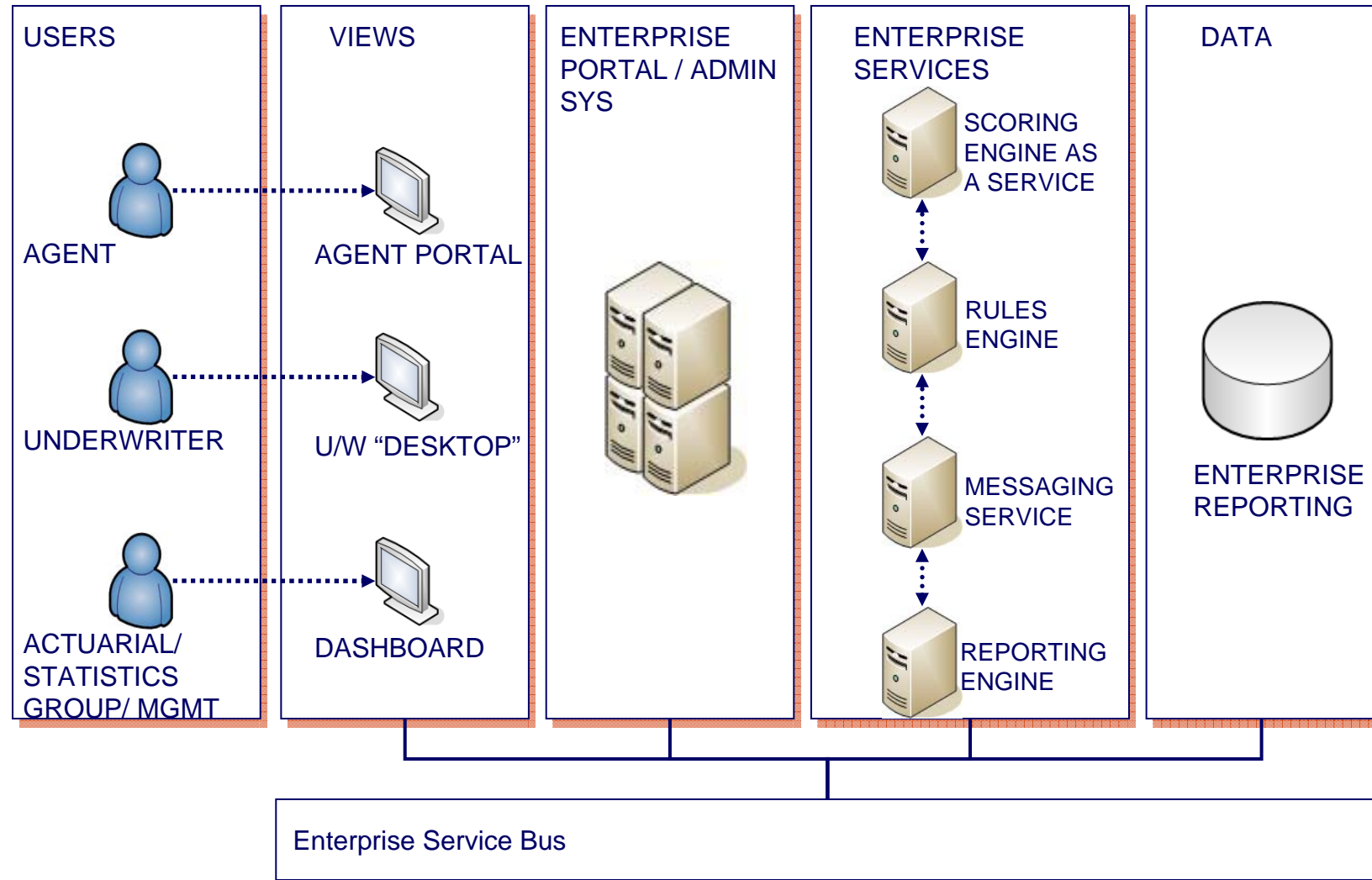
Consistent decision making based on predictive analytics insight

Underwriting	Marketing	Claims	Agency Management	Monitoring Results
Right Pricing, Risk Selection and Underwriting Decisions	Identification of profitable territories for target marketing applications	Auto- assignment of claims to appropriate adjusters and SIU units	Flag new agents as go or no-go based on predictive modeling score and reason codes	New Agent Appt Revenue Growth Agency Comp Expense Ratio

Based on insight develop strategies and process to improve outcomes

Industry Best Practices – A Commercial Lines Study

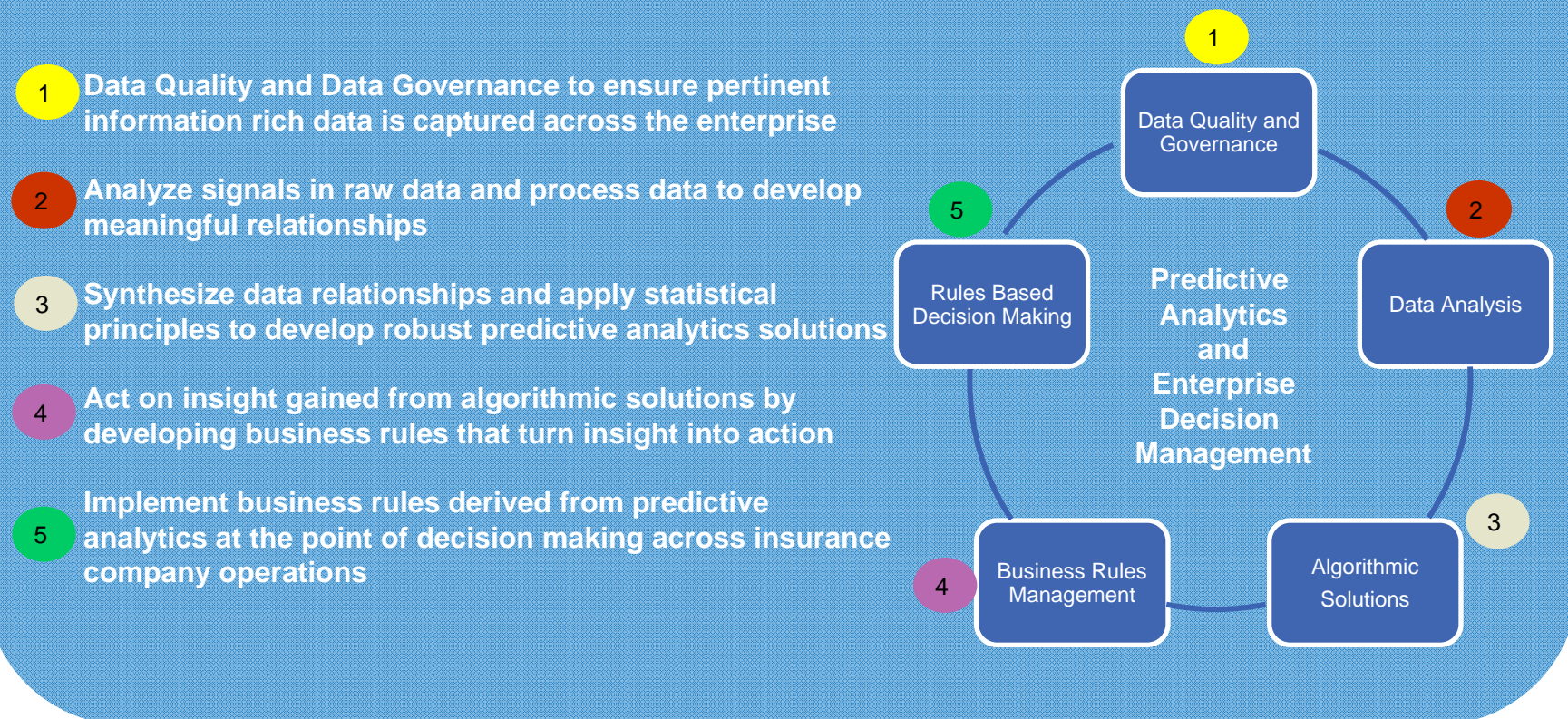
Enabling Technology to Drive Predictive Analytics Decisions at the Point-of-Sale



Industry Best Practices – A Commercial Lines Study

Predictive Analytics and Enterprise Decision Management

Predictive Analytics and Enterprise Decision Management Components





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Emerging Trends and Applications

Becoming a Predictive Analytics Enabled Organization

Emerging Trends and Applications

Three powerful trends are driving the adoption of a new approach to predictive analytics. An unforgiving demand for performance, a wake-up call for better risk selection and pricing in face of tougher regulatory enforcement and external competitive pressures, and exponentially increasing amounts of data to process, comprehend, and react to.

Predictive Analytics	<ul style="list-style-type: none"> • New predictive analytics techniques such as geo-spatial modeling, text mining and machine learning are emerging but generalized linear models still remain most popular. • New and innovative lifestyle and demographic data sources are being incorporated into traditional predictive analytics applications
Technology	<ul style="list-style-type: none"> • Technology is becoming more and more of a competitive differentiator among P&C insurance companies and this extends into the way technology is used to enhance predictive analytics • Data Warehousing, Master Data Management, Performance Management, Business Intelligence, Business Rules Management and Integration Technologies are all key components of a predictive analytics strategy
Strategy	<ul style="list-style-type: none"> • Strategic applications of predictive analytics are being made at the executive level and go beyond pricing and underwriting and include agency appointment and marketing, claims, new products, mergers and acquisitions and services and fraud detection • The dynamic application of strategy is one way predictive analytics enabled insurance carriers can fend off market pressures and stay ahead of the underwriting cycle
Process	<ul style="list-style-type: none"> • With the technology in place, predictive analytics insight are being seamlessly integrated into insurance company operations to aid end-users from underwritings, marketing reps and claims adjusters among others to leverage and predictive analytics at the point-of-decision making • The drive for operational efficiency and the reduction in expense ratio has made the application of predictive analytics in day-to-day operations even more critical

Emerging Trends and Applications

P&C insurance carriers are finding new ways to extend their predictive analytics investment across the enterprise from new underwriting and pricing applications, claims and fraud and various marketing applications. While still in their infancy, these applications hold promise of improved segmentation resulting in improved profitability, customer service and operational efficiency.

Underwriting and Pricing	<ul style="list-style-type: none"> • Loss Control • Eligibility • Pricing , Company Placement and Tier Assignment • Compliance • Account Rounding and Account Scoring
Claims and Fraud	<ul style="list-style-type: none"> • CM Assignment • SIU Referral • Utilization Review • Reserve Setting • Litigation
Agency Management and Marketing	<ul style="list-style-type: none"> • Commissions • New Agency Appointments • Lead Assignment • Product Selection and Recommendations

Improved Profitability

Enhanced Customer Service

Reduced Operating Expenses

Emerging Trends and Applications

A Closer Look – Predictive Analytics and Agency Appointments

Business Problem

Agency appointments and agency management are critical functions for P&C insurers since a major percentage of commercial lines business is generated through indirect or agent submissions. Despite the importance of this function, P&C carriers have not applied science proactively in the appointment of new agents. This results in appointments of new agents that may or may not generate profitable business resulting in cancellations of certain new agents within 24 months of appointment.

Addressing the Problem through Predictive Analytics

Business Action

At the point of agent appointment decision making, leverage data to determine the future likelihood that a new agent will generate higher than average profitable business. Leverage these insights in targeted marketing and appointment strategies.

Predictive Modeling Analytics

Develop a predictive analytics solution based on internal P&C insurance carrier data, external demographic data, agency appointment and book data to identify new agents that have a higher propensity to generate profitable business after their initial appointment with a P&C carrier. Act on this insight by developing agent appointment strategies based on these results.

Realizing Value

Lower cancellations of new agents thereby maintaining continuity of distribution channels

Improved profitability of new business submissions and overall book quality

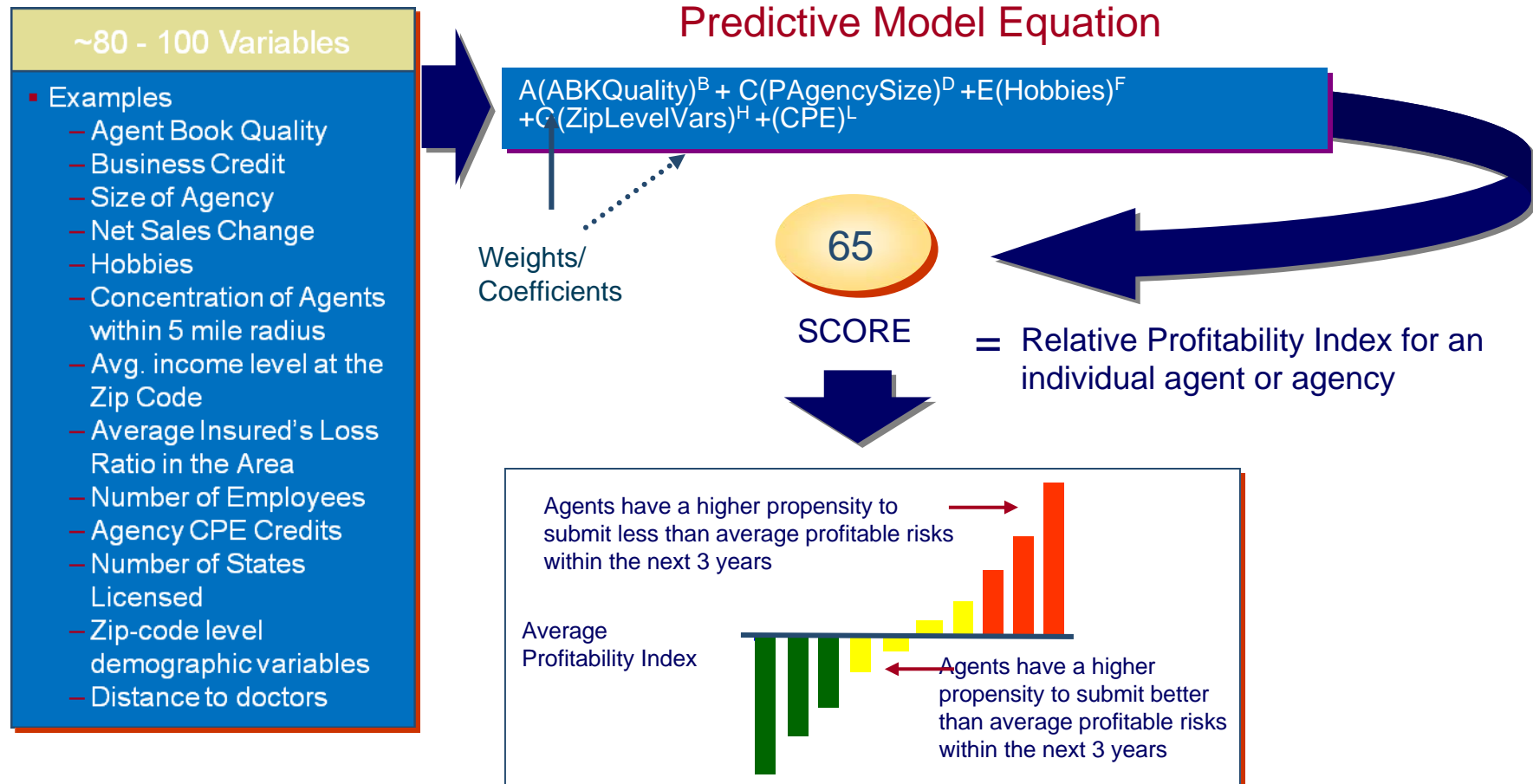
Lower advertising spend and improved marketing campaign effectiveness

Lower expenses associated with administrative functions related to agency appointments and cancellations

Emerging Trends and Applications

A Closer Look – Predictive Analytics and Agency Appointments

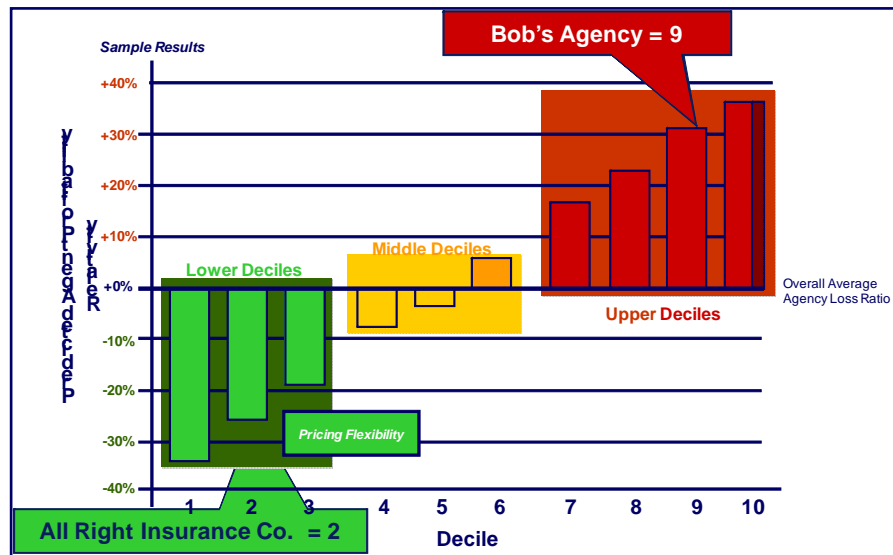
The model produces a score of 1 – 100 that indicates the overall relative profitability in the next 3 years for a new agent



Emerging Trends and Applications

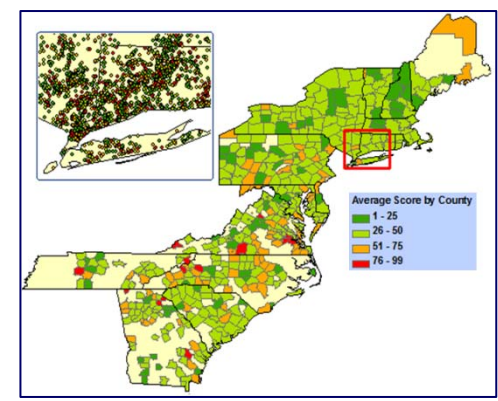
A Closer Look – Predictive Analytics and Agency Appointments

Segmentation of profitable members along the lift curve by decile and by decile groupings (green, yellow, red), can be used to develop strategies and tactics for identification of profitable agents at the point of new agency appointment as well as identification of profitable territories and classes of business for target marketing applications



All-Right Insurance Co.
 Book Quality : Very Good
 Stable Business Operations
 Strong Business Credit Score
 Profitable Area

- Targeted Marketing
- New Agency Appointments
- Agency Commission Plans
- New Product Offerings





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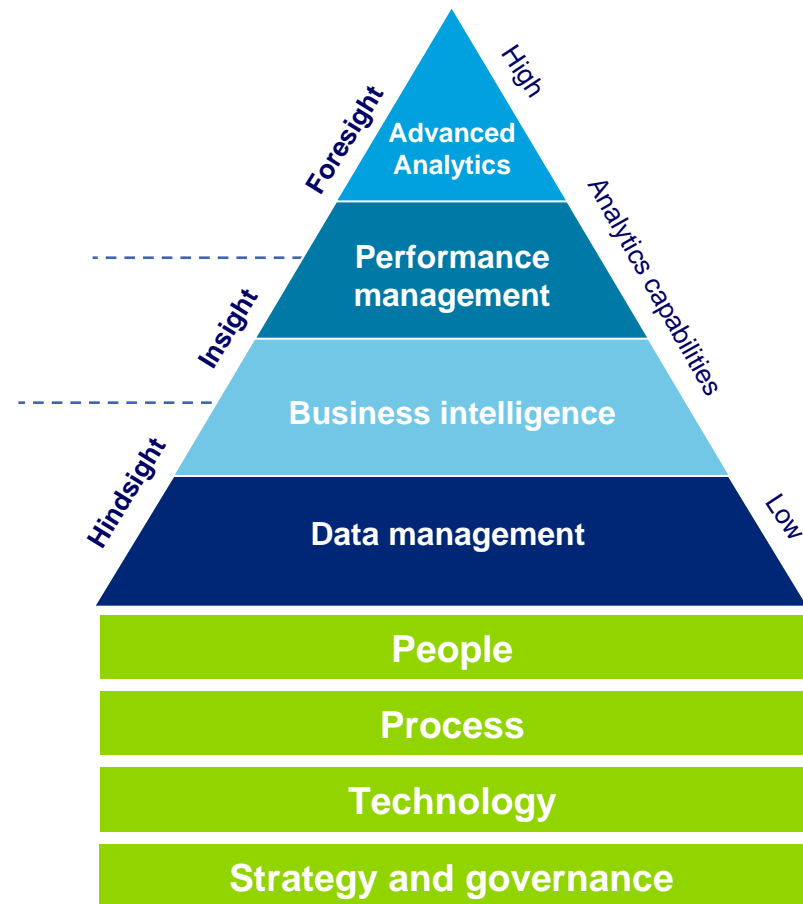
Becoming a Predictive Analytics Enabled Organization

Becoming a Predictive Analytics Enabled Organization

Predictive Analytics and the broader Business Analytics requires an organizational transformation and changes the way P&C insurance carriers do business. It requires a holistic approach with support from all levels of the organization with clearly defined strategic and tactical objectives

To realize more advanced capabilities such as predictive analytics, P&C insurance carriers must move up the stack in terms of value potential and speed – and across the organization to drive faster, deeper adoption.

- Engage the full spectrum of people, processes, technology and governance
- Look ahead to faster, smarter choices
- Use automation to reduce latency
- Apply change management tied to embedded capabilities and outcomes
- Create a culture that thrives on fact-based decisions

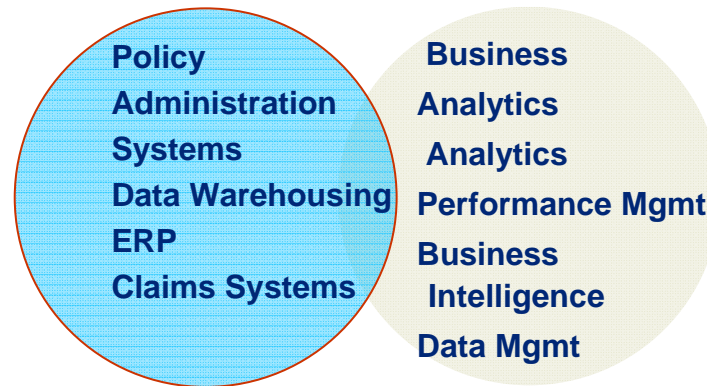


Becoming a Predictive Analytics Enabled Organization

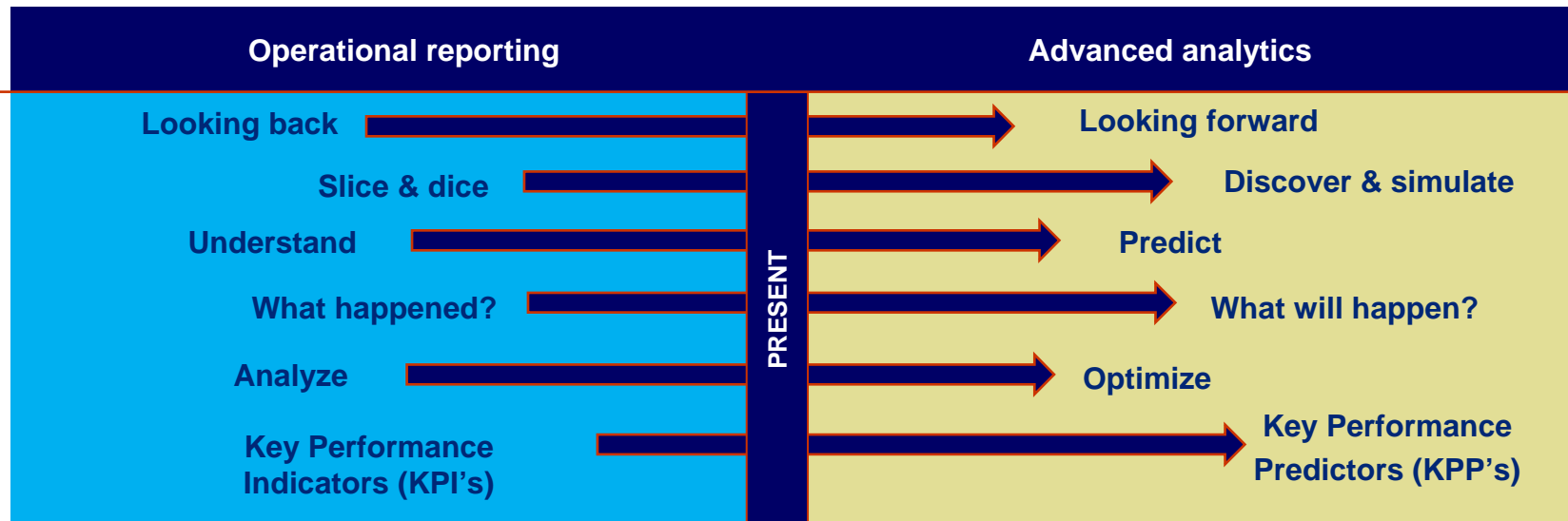
A Required Shift in Mindset

Over the last two decades, P&C insurance companies have been investing heavily in new policy administration systems, data warehousing, claims and ERP systems to streamline their processes. This has resulted in a significant increase in organized data – and a shift in focus toward analyzing information to improve performance

- Large investments
- Highly visible spends
- Traditionally high priority



- Large departmental investments
- Increasing visibility
- Emerging top priority



Becoming a Predictive Analytics Enabled Organization

Establishing the Data Foundation to Support Predictive Analytics

Analytics delivered on a comprehensive data foundation can provide powerful business insights for both internal and external consumption leveraging both internal policyholder and third-party external data.

Building the data strategy

Manage Data as a Corporate Asset

- Promote reuse of data across the organization to drive cost business benefits for cost avoidance/reduction and revenue growth

Store Data Once and Use Multiple Times

- Build once and use multiple times; managing cleansed/quality data centrally increases the value of existing data and reduces integration costs

Build for data privacy, security, and accessibility

- Provide the right people with appropriate data in a timely manner

Executing the data strategy

Goal-aligned

- All investments in data must be aligned with the data strategy and processes should be institutionalized to assess ongoing changes in priorities/

Results-focused

- Data management projects should be managed as a program with a focus on risk management, change management and communication

Effectiveness-driven

- Investments in data-related projects should be regularly measured against data strategy program goals with the right set of controls and transparency

Collaboration-centric

- Project teams should work in a collaborative and integrated manner, and provide timely information to meet the data strategy program objectives

Becoming a Predictive Analytics Enabled Organization

Transforming the Organization

Predictive Analytics enabled strategies can require changes at all organizational levels and a commitment to drive results and decisions based on analytical insights. It is an evolution and a continuous process embedded with change management from start to finish to enable adoption by all stakeholders within the organization. For many P&C insurance carriers, change may be the greatest obstacle to implementing sustainable predictive analytics capabilities.



Becoming a Predictive Analytics Enabled Organization

Steps to Realize the Opportunity

Predictive Analytics

- Assess internal predictive analytics capabilities
- Define predictive analytics business applications
- Establish predictive analytics factory
- Staff and develop internal Predictive Analytics Center of Excellence
- Develop predictive analytics technical applications

Technology

- Define and develop Master Data Management Program
- Identify current data capture and data quality gaps and develop corrective plan
- Develop infrastructure to integrate predictive analytics applications
- Implement Scoring Engines and Business Rules Management Systems
- Implement performance metrics and business intelligence tools to measure impact

Process

- Document current state workflows that will be impacted by predictive analytics
- Define future state workflows that will be impacted by predictive analytics
- Conduct a Gap Analysis across all impacted business processes
- Develop implementation roadmap
- Implement change management activities in a ongoing and continuous manner

Strategy

- Define strategic objectives that could be enhanced by predictive analytics
- Develop short-term and long-term strategic roadmap
- Create organizational alignment across predictive analytics and non-predictive analytics initiatives
- Define critical success factors and performance metrics to track success

About the Speaker



Mo Masud, Hartford, CT

A Senior Manager in Deloitte's Advanced Analytics and Modeling Practice, with over 13 years of insurance, technology and predictive analytics experience. Areas of expertise include: predictive analytics for P&C insurance carriers, private and public sector health insurance, expert systems, business rules management applications and technical implementation and integration of predictive analytics applications. Mr. Masud has led numerous engagements of implementation of large scale predictive analytics and custom technical applications for large and mid-size insurance carriers. He spends a great deal of time helping P&C insurance carriers successfully implement their predictive analytics business strategies.

Mr. Masud is a frequent speaker at industry trade conferences on the end-to-end development and deployment of predictive analytics across the insurance industry.

Mr. Masud holds a Master's of Business Administration and a Bachelor of Science from Rensselaer Polytechnic Institute.

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