Listening at scale

Using AI to better connect with and understand your customers

3/26/24

RSM

Speaker: George Casey

George Casey

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Advanced Analytics
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Summary of experience

As the head of RSM's Advanced Analytics practice, George spearheads the delivery of innovative solutions to clients through emerging technologies such as machine learning, predictive analytics, and artificial intelligence.

With a wealth of experience in the industry, George previously held roles as the Chief Marketing Officer and Chief Technology Officer for Junction Solutions. There, he was instrumental in the development of the Multi-Channel Retail software solution which was eventually acquired by Microsoft.

Over his 25-year tenure, George provided invaluable guidance on digital transformation strategy, business intelligence and analytics strategy, and ERP/CRM system design for both B2B and B2C clients.

George's extensive knowledge and expertise have led him to be published in numerous professional and trade journals. He is also a sought-after seminar and keynote speaker. George is a Microsoft Certified Azure Data Scientist and has authored several manuals for Microsoft on reporting and business analytics.

Education

Master's of Science, Predictive Analytics, Northwestern University

Master's of Business Administration, Kellogg School of Management, Northwestern University

Bachelor of Science, University of Illinois, Major: Information Systems

Speaker: Joshua Benton

Joshua Benton

Principal

Practice Leader
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Summary of experience

Josh leads RSM's Human Centered Design practice. HCD is fundamentally about placing the user and user behaviors at the center of the solution. The HCD practice focuses on marketing, user interface design, user experience and development of digital platforms.

Josh's expertise encompasses a variety of capacities including design thinking, marketing and branding, start-up advisory, and technology consulting.
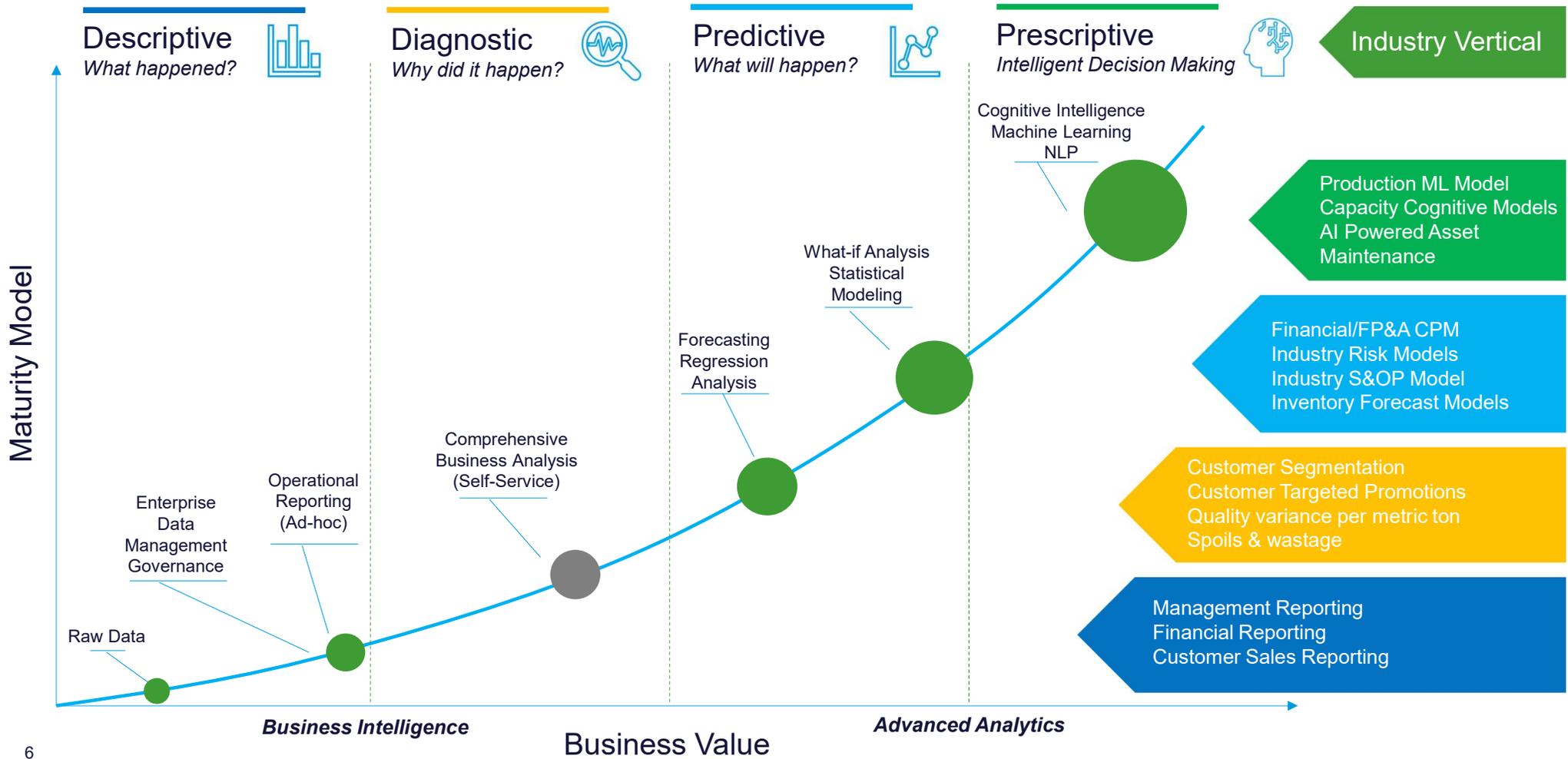
Relevant experience

- 24+ years of practice in the related fields of strategic design, business transformation, marketing and technology & systems analysis.
- Has led multiple large scale business model creation and implementation projects including electronic medical records, E-commerce and CRM engagements.
- Worked with more than 40 venture funded start-ups, with more than 30% of those achieving exit; responsible for leading a variety of services including marketing, branding, strategy and human capital initiatives.
- Responsible for managing the invention and deployment of a custom CRM platform for the nation's 9th largest health insurer. The CRM platform was developed specifically to meet the needs of small employer plans; at inception total annual business revenues within this business unit did not exceed $10M. When the unit was divested, annual sales exceeded $250M.
- Led the internal cultural change and external market engagement activities for the largest cyber school in Pennsylvania. This resulted in a 2X increase in student users over a 24-month period equaling a 9 figure increase in annual revenues.
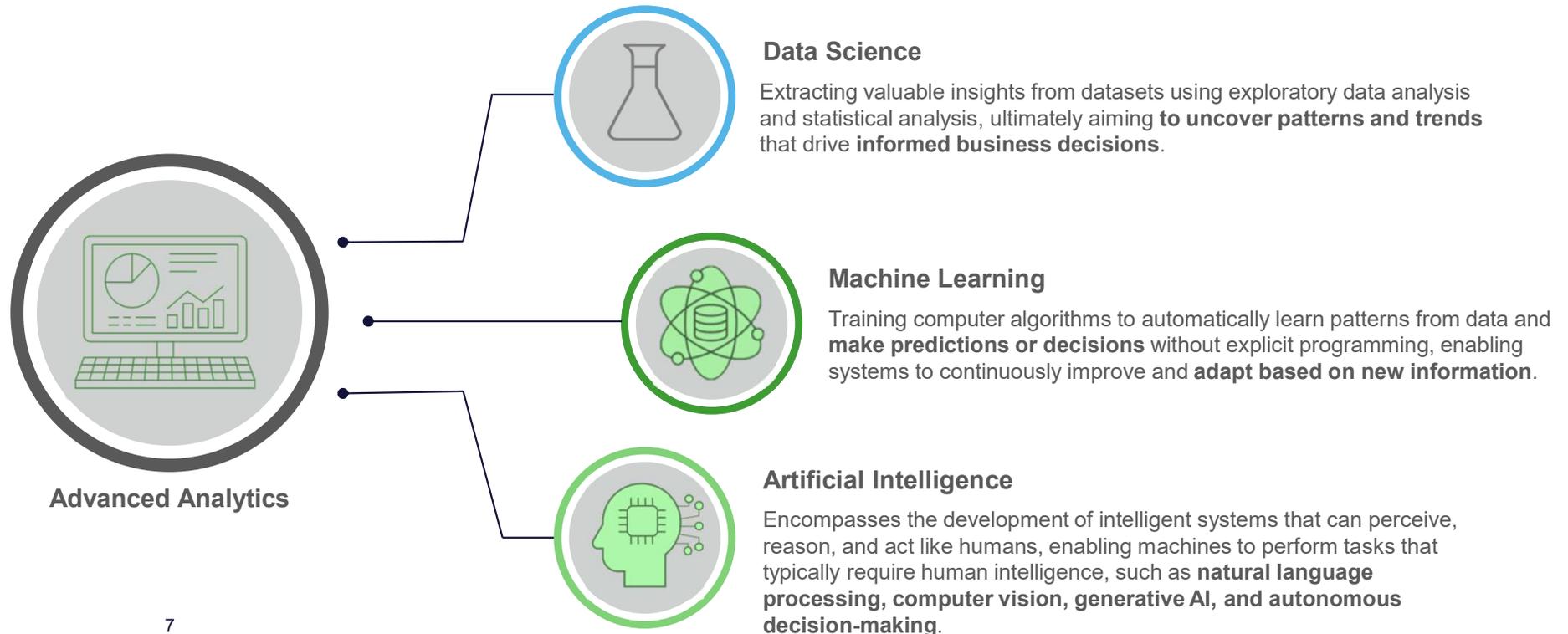
Agenda

Data analytics maturity model

Descriptive
What happened?

Diagnostic
Why did it happen?

Predictive
What will happen?

Prescriptive
Intelligent Decision Making

Industry Vertical

Maturity Model

Cognitive Intelligence
Machine Learning
NLP

Production ML Model
Capacity Cognitive Models
AI Powered Asset
Maintenance

What-if Analysis
Statistical
Modeling

Financial/FP&A CPM
Industry Risk Models
Industry S&OP Model
Inventory Forecast Models

Forecasting
Regression
Analysis

Comprehensive
Business Analysis
(Self-Service)

Customer Segmentation
Customer Targeted Promotions
Quality variance per metric ton
Spoils & wastage

Enterprise
Data
Management
Governance

Operational
Reporting
(Ad-hoc)

Management Reporting
Financial Reporting
Customer Sales Reporting

Raw Data

Business Intelligence

Advanced Analytics

Business Value

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What is advanced analytics?

Advanced analytics is the application of advanced techniques and technologies, such as machine learning and artificial intelligence, to **gain insights** from data. This enables organizations to make **data-driven decision**, improving outcomes, accelerating processes, and reducing costs. The following are **3 main components** to advanced analytics:

Data Science

Extracting valuable insights from datasets using exploratory data analysis and statistical analysis, ultimately aiming **to uncover patterns and trends** that drive **informed business decisions**.

Advanced Analytics

Machine Learning

Training computer algorithms to automatically learn patterns from data and **make predictions or decisions** without explicit programming, enabling systems to continuously improve and **adapt based on new information**.

Artificial Intelligence

Encompasses the development of intelligent systems that can perceive, reason, and act like humans, enabling machines to perform tasks that typically require human intelligence, such as **natural language processing, computer vision, generative AI, and autonomous decision-making**.

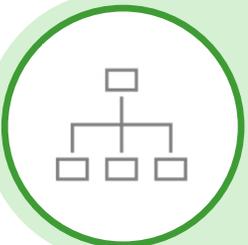# Machine learning applications – traditional

Supervised

Regression
Predicts the numeric value of an outcome.

What is the value of A?

Classification
Answers simple two-choice question like yes/no.

Is this A or B?

Time-Series
Estimates the value for future time periods.

What's the value of A in the next periods?

Unsupervised

Clustering
Makes groups of data based off similar characteristics.

Which group does A most likely belong to?

Association
Groups data from tendencies of co-occurrence.

Which items are usually bought together?

Machine learning applications – cognitive

Supervised

Natural language process
Uses text-only data types to classify new texts with user set labels.

Is this text A, B, C…?

Computer vision
Uses image-only data types to classify new images with user set labels.

*Does this image contain A, B, C…?*
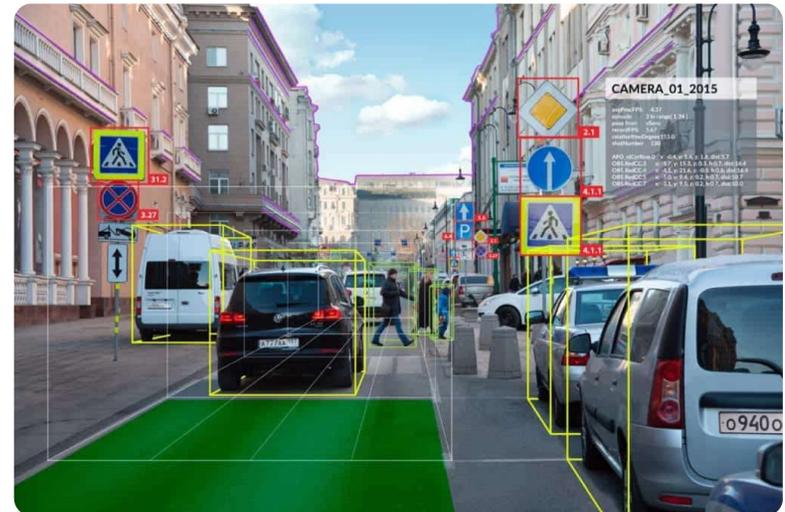
Generative AI application

Text generator produces natural language text, ranging from simple sentences to entire articles.

Image generator can generate new images based on input parameters, turning text prompts into images and artworks.

Chatbot can engage in conversations with users in a friendly interface, providing relevant responses based on learned knowledge.
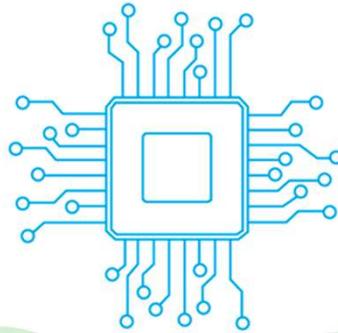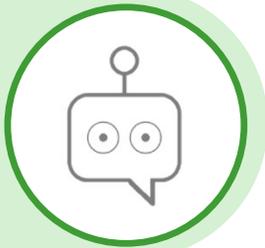
Plugins (such as those deployed by OpenAI), can be integrated into other software products, allowing for powerful capabilities within applications.
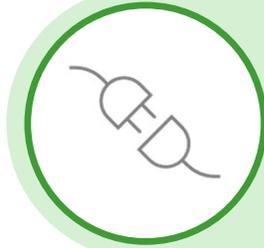
Summarization automatically generates a concise and coherent summary of any text or document.

Code generation can create and explain functional code in multiple programming languages based on user input.

What is ChatGPT?

ChatGPT is an AI chatbot powered by an **advanced large language model (LLM)** developed by OpenAI. The model powering the chatbot is called a **Generative Pre-trained Transformer (GPT),** which is based on architecture known for its ability to effectively process and generate natural language text. It has been specifically fine-tuned for generating human-like responses in conversational contexts.

Enhancing Client Services

Quick access to information, insights, and perspectives
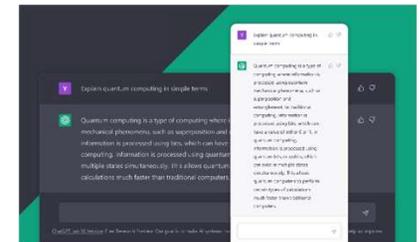
Accelerated idea generation and research

Enhanced productivity through automation

Key Capabilities

- Answering Questions

- Providing Explanations

- Generating Ideas

- Offering Suggestions

Common Use Cases

Writing Agendas

Building Approaches

Writing Proposals

High-level Benchmarking

Risks and Considerations

Outdated Data: Current data feeding algorithm is only up to 2021

Data Variability: No guarantee on accuracy

Privacy Concerns: All information typed into ChatGPT is part of the database (client privacy, sensitivity, IP issues, etc.)

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Driving business value and ROI with data and AI

Common value levers

Increasing revenues

1. Customer Segmentation
2. Churn Prediction
3. Pricing Optimization
4. Product Bundling and Upselling
5. Customer Lifetime Value

Reducing costs

1. Supply Chain Optimization
2. Fraud Detection
3. Predictive Maintenance
4. Customer Service Automation
5. Resource Management
6. Customer Acquisition Cost

Competitive differentiation

1. Data and AI strategy
2. Data Driven Culture
3. Governance and Compliance Excellence
4. Hyper-personalized Marketing
5. AI and Innovation COE

*Providing accurate information, to the right users, in a timely manner to make **actionable** decisions*

Lead scoring

CHALLENGE

- Looking to effectively **generate growth** towards revenue goals and **improve win rates**

SOLUTION

- **Perform Lead Scoring** with a regression model to assess the probability to win an opportunity based on Encounter/Interaction timelines and profiles, additional demographic data, whether the client's proposal fall in line with past solutions
  - To enhance lead scoring: Churn Analysis could be conducted as an additional experiment to understand whether a client would stay after an initial service

RESULTS

- **Increase lead progression and conversion rates** through a consistent and quantifiable model that **improves yields and win rates**
- Improve **clarity and consistency** in lead quality in all stages
- **Increased customer retention** and **revenues**

Lead scoring variable relationship
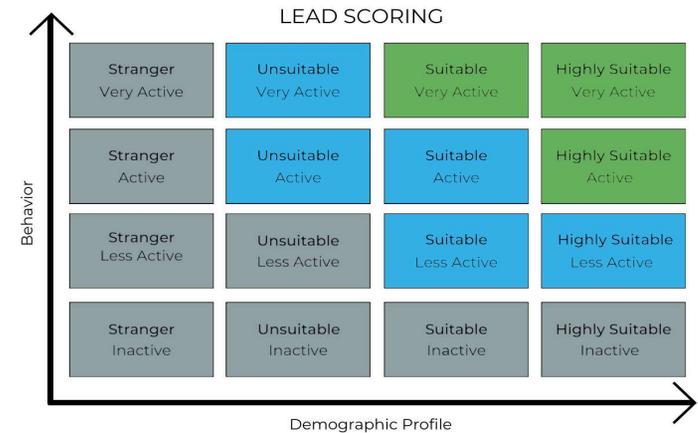
Dashboard to visualize Lead Scoring inputs to facilitate decision making

Lead scoring analysis dashboard
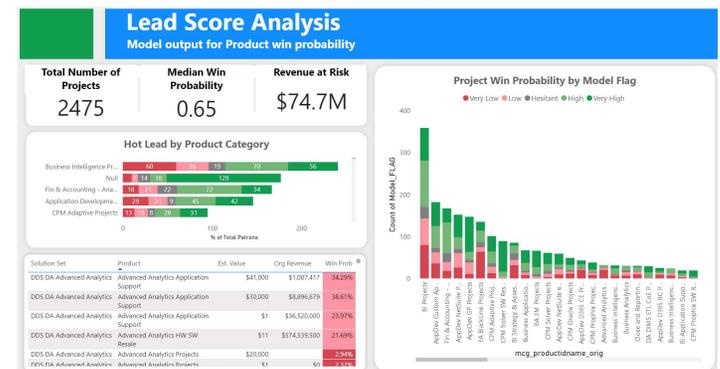
Dashboard to visualize Lead Scoring outputs to facilitate decision making

Hyper-personalized campaign outreach

CHALLENGE

- Struggle to generate **high-quality** content while maintain a **consistent voice** across campaigns
- Manually creating campaign outreach is **time-consuming**
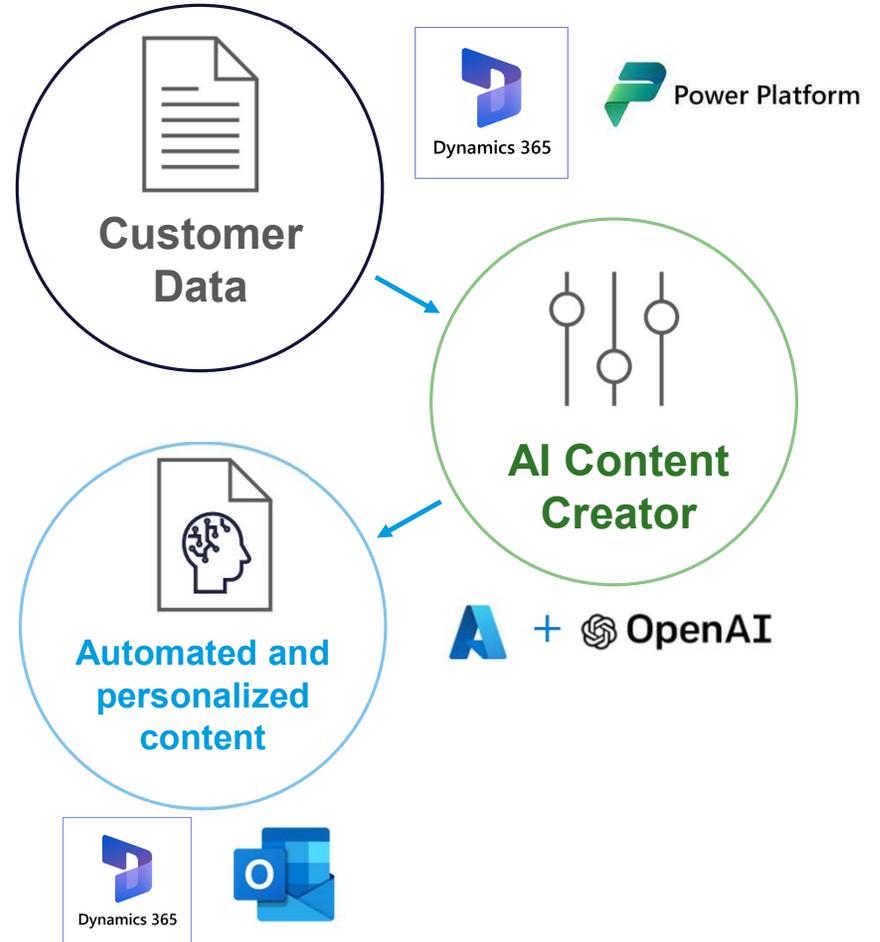
SOLUTION

- AI creates **new material** based on previous successful campaigns and specific customer data
- AI analyzes information and **accurately** formulates **high-quality** campaign messages

RESULTS

- Increased **efficiency and quality consistency** in the content generation (writing) process
- **Reduction** in time spent creating content, allowing for **more time** to focus on other aspects of the proposal

Workflow – Content Generator

Microsoft

Customer Data

Dynamics 365

Power Platform

AI Content Creator

A + OpenAI

Automated and personalized content

Dynamics 365

Reducing revenue uncertainty by predicting churn

CHALLENGE

- The client needed to **predict churn** to enable a **proactive approach** to change the outcome of customer participation and maintain lifetime value
- The organization **did not understand key factors** of why members became inactive

SOLUTION

- **Data Driven Discovery** to find patterns, trends, and correlations in customer demographics and historic member interactions
- Deployed **90%+ accurate model** in less than eight (8) weeks

RESULTS

- Client **proactively identifies risk** of churn and can **plan intervention activities, resulting in increased member retention and customer lifetime value**
- **Insight and transparency** into **model creation** to observe for **bias**

Churn dashboard
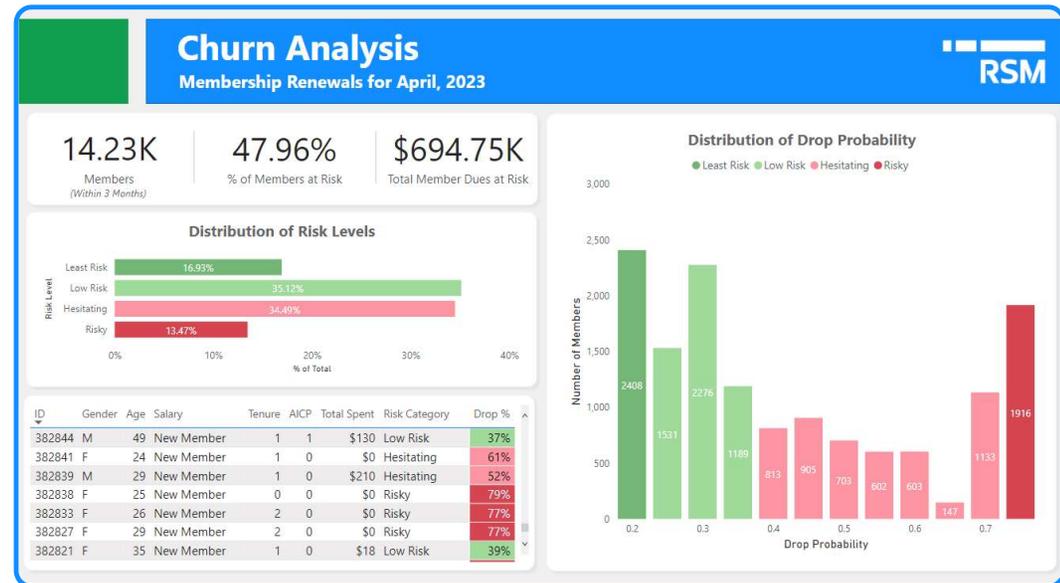
Dashboard to visualize ML model output and facilitate decision making

Intelligent forecasting

CHALLENGE

- National organization **needed hourly refreshes of data** while balancing large data volumes and inputs
- **Struggled** with proper **sales forecasting and planning**, held back by **manually intensive processes** focused only on **internal company data**

SOLUTION

- Automated **forecasting models covering sales, costs, and commodities**, while leveraging millions of external datasets
- Detailed forecasting model with drill-down capability on **customers and products at a weekly level**

RESULTS

- **Hourly data refreshes** enabled, reducing time to make decisions
- **10% improvement** in **forecast accuracy,** resulting in ~$27M of sales protected through boosted planning processes
- **Macroeconomic leading indicators** greatly enhance forecasting capabilities

Increase customer lifetime value with targeted offers

CHALLENGE
- **Struggled** to understand **customer purchase behavior**
- No personalized offers based upon **purchase history**
- Needed to enhance ability to **suggest the next product** to boost sales

SOLUTION
- Leveraged **Machine Learning** to **predict customer response** based upon the best product to recommend
- Developed **personalized offers** and outreach to boost sales

RESULTS
- Enhancement in CLV lead to great profit increases relative to randomly sending offers/product suggestions to customers

Workflow – Next Product to Buy

Customer Data → Predict Customer Response → Identify Next Product to Recommend → Personalize Offer → Quantify Profitability
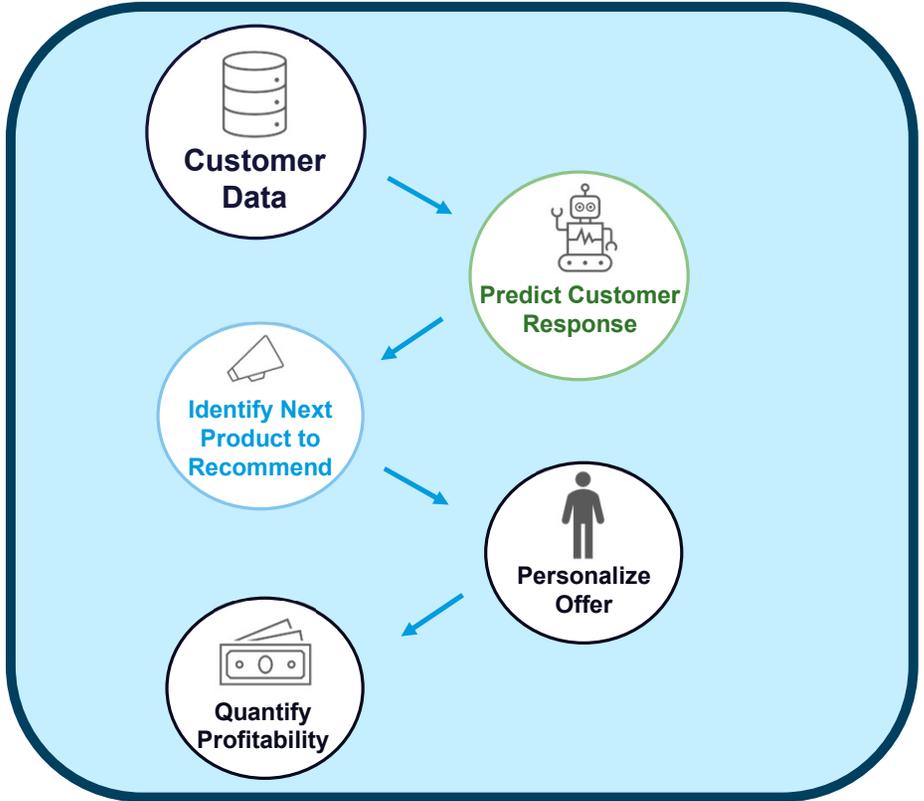
Be curious!

✓	👥	📊	📄
Outcomes	Dimensions ("By Analysis")	Correlations	Explanatory Variables

↓

Research Agenda

Breaking down AI tasks

Type I: mundane, redundant tasks

Examples: data entry, file organization, formatting documents, online research

Solved by: automation, generative AI

Type II: repetitive tasks that take some focus

Examples: copy/paste of data, monthly reconciliations, reviewing documents

**Solved by**: automation, generative AI

Type III: requires human thought and focus, would take time hands on keyboard

Examples: writing content, web scraping, responding to messages, emails (text generation), coding

Solved by: Generative AI

Creating value with advanced analytics - approach

Organizations are optimistic about investing in data and analytics but becoming more realistic in their journey for real value. RSM's Advanced Analytics practice provides a service offering covering strategy, design, solution development, governance and investment
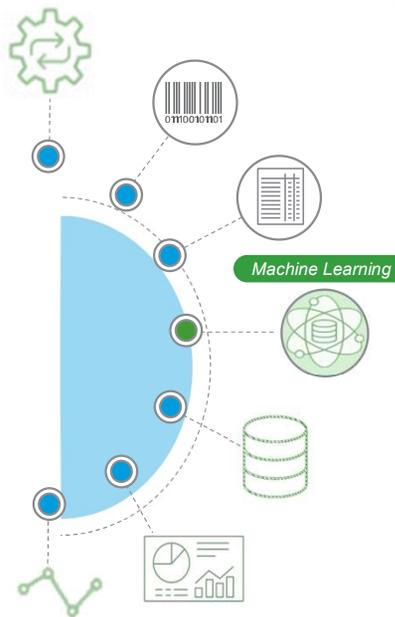
Business Objectives & Value Hypothesis	Research Agenda	Solution Development	Scale & Mature
• Targeted assessment of ability to start ML project covering people, skills, knowledge, technology and data discovery and readiness • Formulate ML Vision • ML and Data Literacy & Workforce up-skilling	• Questionnaires, facilitated workshops and RSM use case catalog used to develop a prioritized list of client ML use cases	• Software engineers (RSM-only, Client Paired, or Client-only) develop pilot using prioritized use case, candidate data sets into test environment	• Get model to 'live' • Scaling and Maturing the ML Operating Model • Prioritize additional opportunities, source and curate data, ensure proper resourcing and implement model governance

Results That Matter

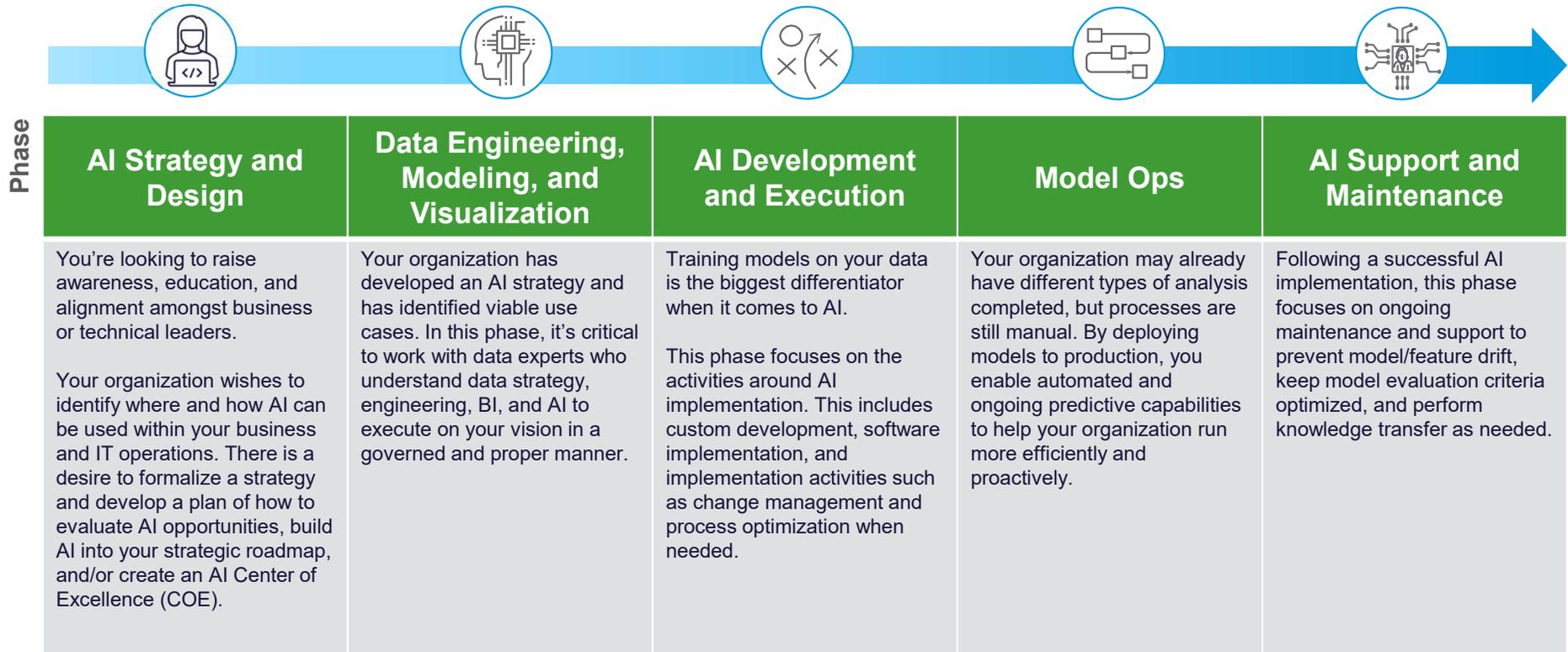|			
• Clear understanding of organizational gaps that need to be resolved before starting an ML project • Vision for use of ML • Business Case	• Inventory of use cases (backlog) appropriate for ML and Automation, prioritized based upon agreed criteria • Repeatable tool and process to keep backlog evergreen	• First Model Developed • Time boxed implementation of the top prioritized use case, with training data provisioned and the model trained, evaluated and deployed to test environment	Operating model in place with clear roadmap for – 1. Delivering additional use cases and data, 2. Required people and domain expertise 3. Model governance 4. Continued investment

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RSM data and AI: strategy and technical enablement to meet your needs

RSM's AI customer journey outlines a strategic pathway for clients to harness the potential of AI at all phases. RSM can help you navigate this journey from initial education, through to the implementation of tailored AI solutions. We support our clients not just with successful adoption, but also the ability to make impactful decisions, and ultimately becoming AI champions within your organization.

AI Strategy and Design	Data Engineering, Modeling, and Visualization	AI Development and Execution	Model Ops	AI Support and Maintenance
You're looking to raise awareness, education, and alignment amongst business or technical leaders. Your organization wishes to identify where and how AI can be used within your business and IT operations. There is a desire to formalize a strategy and develop a plan of how to evaluate AI opportunities, build AI into your strategic roadmap, and/or create an AI Center of Excellence (COE).	Your organization has developed an AI strategy and has identified viable use cases. In this phase, it's critical to work with data experts who understand data strategy, engineering, BI, and AI to execute on your vision in a governed and proper manner.	Training models on your data is the biggest differentiator when it comes to AI. This phase focuses on the activities around AI implementation. This includes custom development, software implementation, and implementation activities such as change management and process optimization when needed.	Your organization may already have different types of analysis completed, but processes are still manual. By deploying models to production, you enable automated and ongoing predictive capabilities to help your organization run more efficiently and proactively.	Following a successful AI implementation, this phase focuses on ongoing maintenance and support to prevent model/feature drift, keep model evaluation criteria optimized, and perform knowledge transfer as needed.

Phase

Data and AI capabilities

Data analytics is a discipline focused on extracting insights from data. It comprises the processes, tools and techniques of data analysis and management, including the collection, organization, and storage of data.

Data analytics has become increasingly important in the enterprise as a means for analyzing and shaping business processes and improving decision-making and business results. Our Data Analytics practice markets, sells, designs, implements, and manages the tools that enable our clients to derive insights and democratize their data assets, across enterprise systems.

Advise → **Deliver** → **Manage**

DATA TRANSFORMATION TO INSIGHT

Data Foundation	Reporting & Analytics	Information Delivery	Data Management
Integrated Data for Trusted Analytics	Evidence-Based Decisions & Insights	Secure & Available Data	Ongoing Protection of Vital Data

People | Process | Data | Technology

FOCUS INDUSTRIES

Retail	Food & Beverage	Industrials
Government	Distribution	Hospitality
Consumer Products	Healthcare & Pharma	
Professional Services	Financial Services	

Our services

Data Integration & Migration (DIMS)

- ERP & System Migration
- Data Quality
- Systems Integration
- Extract Transform Load (ETL)
- Analytics Process Automation
- Alteryx Enablement

Business Intelligence & Data Strategy

- Business Intelligence
- Data Strategy
- CDO Strategy
- Data Assessments
- Data Warehousing
- Process Mining
- Master Data Management
- Dashboards (advanced)
- Data Governance
- Big Data / IoT

Advanced Analytics

- Predictive Analytics
- Prescriptive Analytics
- R & Python Scripting
- Generative AI
- Machine Learning
- Natural Language Processing
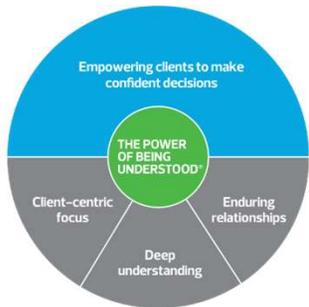- Artificial Intelligence

Your results

- Improved analysis and decision-making
- Improves efficiency
- Allows your organization the flexibility to use integrated data for multiple purposes
- Increases productivity by reducing the bottle neck of getting usable data
- Ensuring data democratization while securing data

- It is critical to establish trust and adoption of the business intelligence environment
- Promotes consistent and common understanding of your data
- Increased organizational collaboration and communications
- Enterprise view of the organization
- Empowers end users through self service BI

- Targeted delivery of data, reporting, and analytics capabilities
- Improves ability to deliver results and actionable insights
- Drives consistency in the use of data and significantly reduces many common pain points
- Mobile BI and enhanced information access
- Faster reporting, analysis, and planning
- Accurate data from a single source of truth

Empowering clients to make confident decisions

THE POWER OF BEING UNDERSTOOD®

- Client-centric focus
- Enduring relationships
- Deep understanding

1st First Choice Advisor to the Middle Market

5th Largest audit, tax and consulting firm in US

125+ Data and Analytics Consultants

5,800+ Consulting Clients

Certifications

- Adaptive Certified
- Alteryx
- Apple Certified Macintosh Technician
- AWS Certified Alexa Skill Builder
- Certified Information Systems Auditor
- Cloud AWS
- CompTIA
- Security+
- D365 F&SC
- D365 CE
- D365 BC
- Database Management
- iOS
- ITIL Certified
- Microsoft Certified Azure AI Engineer
- Microsoft Certified Azure Data
- Engineer
- Microsoft Certified Azure Fundamentals
- Microsoft T-SQL
- Tableau
- Celonis
- Salesforce
- Databricks
- Snowflake

Tools (and more!)

Azure Synapse Analytics

Dell Boomi

salesforce SUMMIT PARTNER

alteryx

prevedere

snowflake

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ASSURANCE | TAX | CONSULTING