



**Episode 4:**  
**AI & Data**  
**Management**

# AAA Webinar 2024 Season Episodes

May 28th: [Demystifying AI for Business Leaders](#)

June 25th: [Training Pre-Trained AI Models](#)

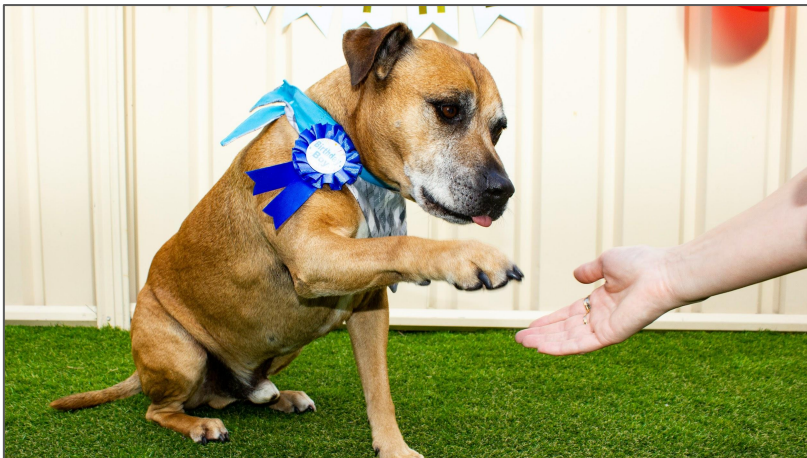
July 23rd: [Augmented Analytics Explained](#)

 August 27th: [AI and Data Management](#)

September 24th: [Intelligent Automation with AI](#)

October 22nd: [AI for Good](#)

# What to Expect



## Interaction Throughout



## Informal Style



# Content Personas



## Data Professional

Data professionals are individuals who specialize in managing, analyzing, and interpreting data to support data-driven decision-making within organizations.



## Business User

Business users are individuals within an organization who utilize data analytics tools and insights to make informed decisions, enhance operations, and achieve business objectives without necessarily having deep technical expertise in data science.



## Leader

Business leaders are executives and managers who drive the strategic direction of an organization by leveraging data insights to make high-impact decisions, foster innovation, and ensure competitive advantage.

# Agenda



**The Big Picture**



**Enabling AI (Analytics)**



**AI for Data Management**



**Dedicated Q&A**





# The Big Picture

# AI is Here to Stay

Forrester predicts that by the end of 2024, 60% of workers will use their own AI tools for their jobs.



## Market Growth

According to Gartner, the AI software market is projected to grow from \$64 billion in 2022 to nearly \$251 billion in 2027, representing a compound **annual growth rate (CAGR)** of 31.4%.



## Economic Impact

McKinsey reports that generative AI alone could add as much as \$4.4 trillion in **economic value** across various use cases by significantly increasing productivity.

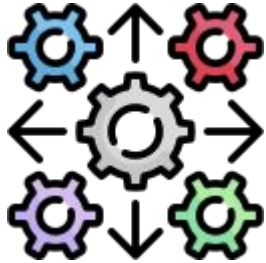


## Investment Surge

According to a Goldman Sachs forecast, global AI investments could reach around \$200 billion by 2025, reflecting the massive financial commitment and belief in AI's transformative potential.

# AI Fails to Deliver

According to Gartner, 85% of AI projects fail to deliver.



## Experience & Integration

According to McKinsey, only 36% of high-performing companies report that frontline employees use AI insights in real-time for daily decision-making, which is crucial for capturing the full value of AI investments.



## Governance & Quality

According to a Forrester report, 56% of organizations identified data quality as the primary factor limiting the successful adoption of AI technologies. Issues such as unstructured data and lack of data lineage, significantly impairs the performance and reliability of AI models.












## Literacy & Talent

According to a study by the World Economic Forum, 60% of AI projects fail to move beyond the pilot stage due to insufficient AI skills and poor understanding of AI technologies among employees.



# Modern Digital Product Landscape

Experience	 Mobile & Web	 Enterprise Core	 Edge
Service	 Rule-Based	 AI / ML	 Orchestration
Foundation	 Cloud Infrastructure	 Data Management	 DevOps

# Service Layer Overview

The logic, services, and processes that support user-facing digital experiences using foundational elements.

## Rule-Based

Services where humans provide the explicit instructions or rules that the system follows to execute tasks and make decisions. The behavior of the system is predetermined by these human-defined rules. This category includes traditional programming, rule-based analytics & statistics, and rule-based automation.

## AI/ML

AI/ML services rely on data-driven learning where systems create their own rules based on examples provided by humans. These include intelligent automation, advanced analytics, and adaptive systems.

## Orchestration

Orchestration services manage and coordinate the flow of data, tasks, and processes across multiple systems, ensuring they work together seamlessly. This category includes API management, MLOps, and process orchestration.

# Gretzkying

“A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be.”  
— Wayne Gretzky



# AI, Analytics & Data

Where the puck is.

## Data Mining & Analytics (including AI)

The systematic computational analysis of data or statistics to discover, interpret, and communicate meaningful patterns that can inform decision-making.

2



1

## Applied Analytics (including AI)

Findings & insights from data mining and analytics are used to inform the criteria needed to make decisions.

3

## Data Management

The process of collecting, organizing, maintaining, and securing data to ensure it is accurate, accessible, and reliable for decision-making.

# Decision Intelligence

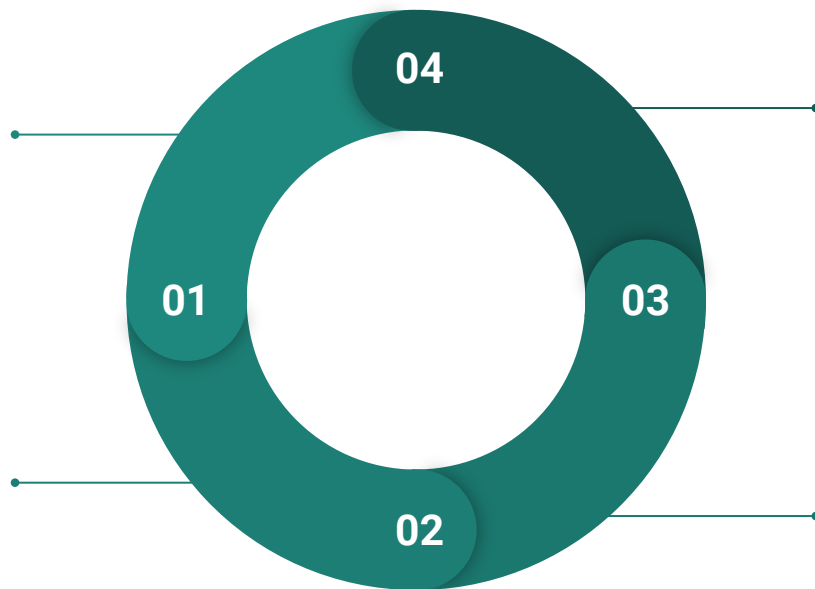
Where the puck will be.

## Decisions

The choices made to inform processes and achieve outcomes based on the decision-maker's criteria.

## Processes

The actions and steps taken to achieve outcomes informed by decisions.



## Applied Data & Analytics (including AI)

The end-to-end process of collecting, processing, analyzing, and interpreting data, then using those insights to inform actions and strategies that align with business objectives.

## Outcomes

The final results or impacts that arise from decisions and processes.

# Statistical Error Types

The goal of both AI & Data and Decision Intelligence is to avoid the below statistical errors.

## Type 1 (False Positive)

A Type I error occurs when a null hypothesis that is actually true is incorrectly rejected. In other words, it's the error of finding a significant effect or difference when there actually isn't one.

**Example:** Concluding that a new drug is effective when it actually has no effect.

**Consequences:** Leads to false alarms, potentially resulting in unnecessary actions or interventions.

## Type 2 (False Negative)

A Type II error occurs when a null hypothesis that is actually false is incorrectly accepted (failing to reject it). In other words, it's the error of missing a significant effect or difference that does exist.

**Example:** Concluding that a new drug is not effective when it actually is.

**Consequences:** Leads to missed opportunities, such as failing to adopt beneficial treatments or policies.

## Type 3 (Wrong Cause)

A Type III error occurs when a correct conclusion is reached for the wrong reason. This often involves correctly rejecting the null hypothesis, but attributing the effect to the wrong cause or misinterpreting the findings.

**Example:** Correctly determining that a drug is effective, but incorrectly attributing the effectiveness to the wrong component of the drug.

**Consequences:** Misleads further research and decision-making, as the true underlying cause or relationship is misunderstood.

## Type 4 (Applied Wrong)

A Type IV error occurs when the correct question or hypothesis is asked, but the result is misinterpreted or misunderstood. This can involve incorrectly applying the statistical method or incorrectly interpreting the p-value.

**Interpreting a Example:** statistically significant result as practically significant when the effect size is actually negligible.

**Consequences:** Results in misleading conclusions, potentially leading to incorrect policies or actions.



# Decision Intelligence Enablement


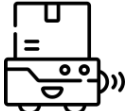

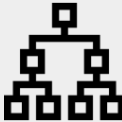





A holistic approach to decision-making, ensuring that organizations can navigate complex environments and make better strategic choices.

Item	Description	Owner	Enablement Outcomes
Outcomes	The final results or impacts that arise from decisions and processes.	Executives	Clearly defined and aligned KPIs are required and must be managed as a learning tool, not a pass or fail grade.
Processes	The actions and steps taken to achieve outcomes informed by decisions.	Decision-Maker(s)	Ensure processes are in alignment with desired outcomes and decisions, and define operational KPIs.
Decisions	The choices made to inform processes and achieve outcomes based on the decision-maker's criteria.	Decision-Maker(s)	Identify the decision-maker(s) and default decisions based on bias, information and criteria.
Applied Analytics	Findings & insights from data mining and analytics are used to inform the criteria needed to make decisions.	Analytics & Application Teams	Provide transparency in how insights were derived and clearly state how they relate to questions, allowing for partial answers.
Data Mining & Analytics	The systematic computational analysis of data or statistics to discover, interpret, and communicate meaningful patterns that can inform decision-making.	Data & Analytics Teams	Fully defined models & methodologies, clear training & testing data delinations, and defined derived fields.
Data Management	The process of collecting, organizing, maintaining, and securing data to ensure it is accurate, accessible, and reliable for decision-making.	Data & Analytics Teams	Created data is understood, trusted and made available through data governance, quality and architecture.



# Managing AI (Analytics)

# Data & Analytics (AI) Landscape

<b>Applied Analytics</b>	 <p>Decision Support &amp; Optimization</p>	 <p>Intelligent Automation</p>	 <p>Recommendations &amp; Personalization</p>
<b>Data Mining &amp; Analytics</b>	 <p>Rule-Based Analytics</p>	 <p>AI Model Creation</p>	 <p>AI Model Use-Case Tuning</p>
<b>Data Management</b>	 <p>Data Architecture &amp; Integration</p>	 <p>Data Governance &amp; Quality</p>	 <p>Data Privacy &amp; Security</p>

# Rule-Based Analytics

Refers to the process of analyzing data by applying predefined rules or logic, often expressed as “if-then” statements, to identify patterns, make decisions, or generate insights. These rules are explicitly set by humans and do not adapt or learn from new data.

## Rules & Logic

Every rule used in the analysis should be well-documented, including its purpose, how it was developed, and the scenarios it covers. Use peer and SME reviews to ensure robustness and avoid biases or oversights.

## Derived Fields

Define and document variables created from raw data, ensuring consistency and accuracy across the organization. Standardize calculations, such as “customer lifetime value,” and maintain clear documentation of all formulas and transformations.

## Monitoring & Iteration

Continuously monitor and update your rule-based analytics based on new data and insights. Collaborate with stakeholders to align rules and methodologies with business goals. Ensure ethical considerations, like privacy and bias, are respected to maintain fairness and transparency.

# AI Model Creation

The process of designing, developing, and training an artificial intelligence (AI) model to perform specific tasks or solve particular problems.

## Quality & Preprocessing

Gathering diverse and relevant datasets, cleaning and preprocessing data to remove errors or inconsistencies, and ensuring that the data accurately represents the problem the model is intended to solve. Data preprocessing steps include normalization, encoding, and feature engineering

## Algorithm Selection

Understanding the strengths and weaknesses of various algorithms, selecting one that best suits the problem at hand, and fine-tuning hyperparameters to optimize performance. The process may also involve comparing multiple models to identify the most effective approach.

## Evaluation & Validation

Using techniques like cross-validation, testing on separate validation datasets, and monitoring performance metrics such as accuracy, precision, recall, and F1 score. Regularly assessing the model's performance helps identify potential overfitting or underfitting issues and ensures the model is robust before deployment.

# AI Model Use-Case Tuning

The process of refining and adjusting an AI model to better fit the specific requirements and constraints of a particular use case.

## Objectives & Constraints

It's crucial to have a deep understanding of the business objectives, goals, and constraints that the model needs to address. This includes knowing the key performance indicators (KPIs) that the model should optimize for, understanding the operational environment, and considering any legal or ethical constraints.

## Optimization

Enhancing a machine learning model's performance by refining both the input data features and the interaction mechanisms with the model. This includes Feature Engineering & Selection and/or Prompt Tuning as key techniques.

## Final Training

Fine-tuning a pre-trained model to better fit a specific use case or integrating retrieval-augmented generation (RAG) techniques to enhance the model's ability to generate contextually accurate responses by leveraging external knowledge sources.



# AI for Data Management

# Accelerated Data Preparation

Automate aspects of data preparation including transformation, data governance and quality.

## Data Transformation

AI and ML algorithms can automate data blending, normalization, and real-time transformation, reducing manual effort. Future advancements will enhance real-time capabilities and create more user-friendly interfaces.

## Data Governance

Automating data governance ensures compliance, security, and ethical use by managing metadata, enforcing policies, and tracking data lineage. Future applications include AI-driven real-time compliance monitoring and adaptive governance systems.

## Data Quality

AI can profile, cleanse, and validate data automatically to maintain high data quality. Future applications will include advanced real-time anomaly detection and self-healing data quality systems.

# The Human Side of Data Management

Leverage AI to make the hardest parts of data management easier.

## Data Literacy

AI can play a key role in improving data literacy by creating accessible documentation, summaries, and visualizations that make complex data concepts easy to grasp. Generate simplified explanations and visual aids that help non-technical stakeholders understand new data governance policies or insights.

## Data Ownership

AI can assist in clearly defining data elements and their ownership, ensuring consistency and clarity across the organization. This helps stakeholders understand their roles and the importance of maintaining data quality and security.

## Data Stewardship

AI can support data stewardship by automating the creation of metadata, lineage, and governance documentation, as well as by providing tools for monitoring data quality and compliance.



# Dedicated Q&A