MetaLearner

From Systems of Record to Systems of Intelligence

The Core Problem: The Planner Is Still the System

The system generates recommendations for action or decisions.

The human planner intervenes and overrides the system's suggestions.

The override is recorded, but the system fails to adapt or learn from this input.

The planner's override creates a disconnect, preventing the system from improving.

Systems of Record vs. Systems of Intelligence

Static vs. Dynamic

System of Record (ERP)

Stores Transactions

Enforces Structure

Tracks State

System of Intelligence (MetaLearner)

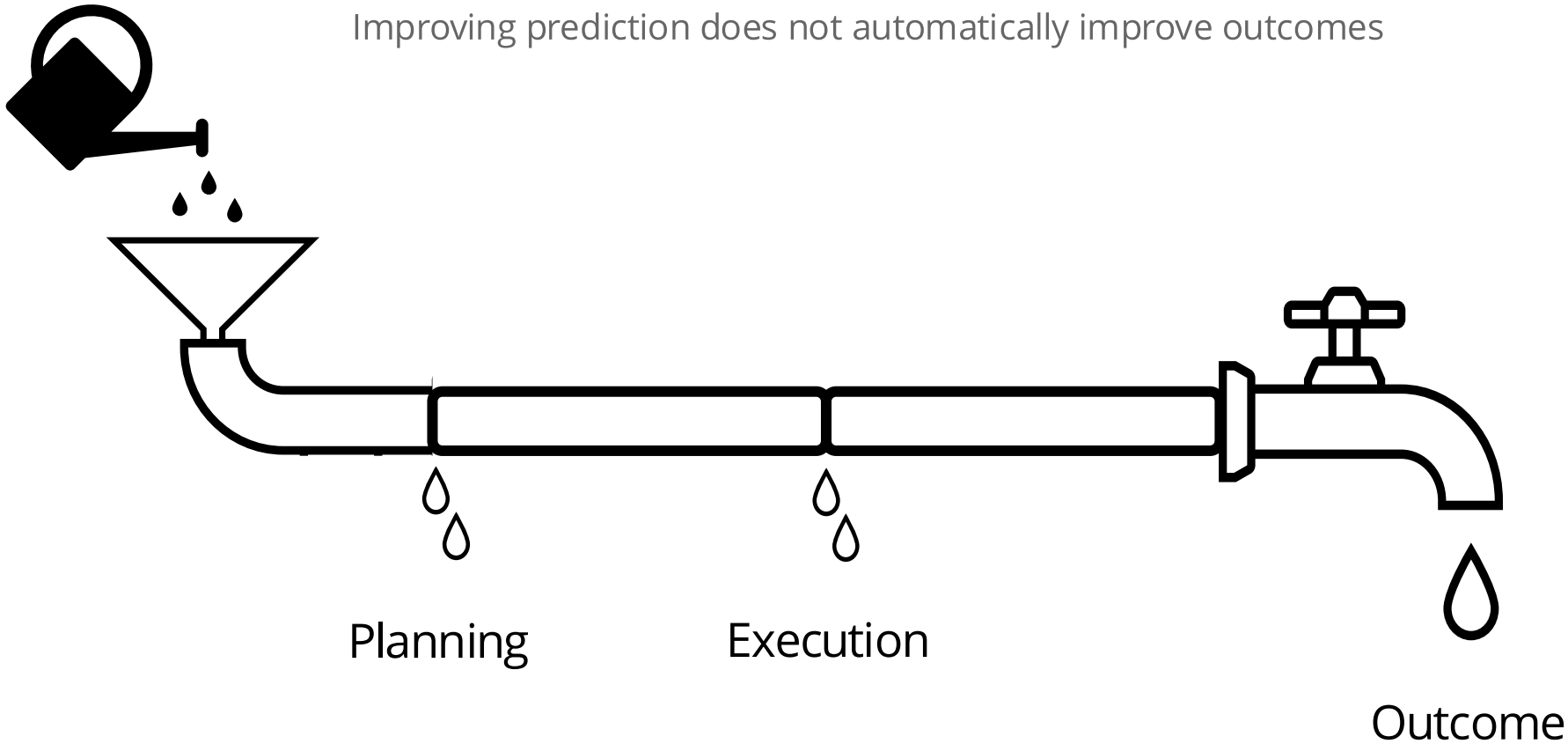
Interprets Context

Learns Behavior

Recommends Decisions

Better Forecasts Did Not Fix the System

Improving prediction does not automatically improve outcomes



Inventory is still misplaced. Stockouts still happen. Teams are still firefighting

The Missing Layer: The System Ignores the Most Valuable Moment

Overrides: The Seat of Judgment

Contain context, experience, and behavioral knowledge.

Crucial Deviations

Represent crucial deviations from standard processes.

Overlooked Value

Often overlooked, yet hold immense value.

The 4-Step Transformation Process

Experiential Ontology

1. **What Changed?**
   Identify the specific data points or observations that deviate from expectations or existing models.

2. **Why?**
   Analyze the root causes behind these changes or deviations.

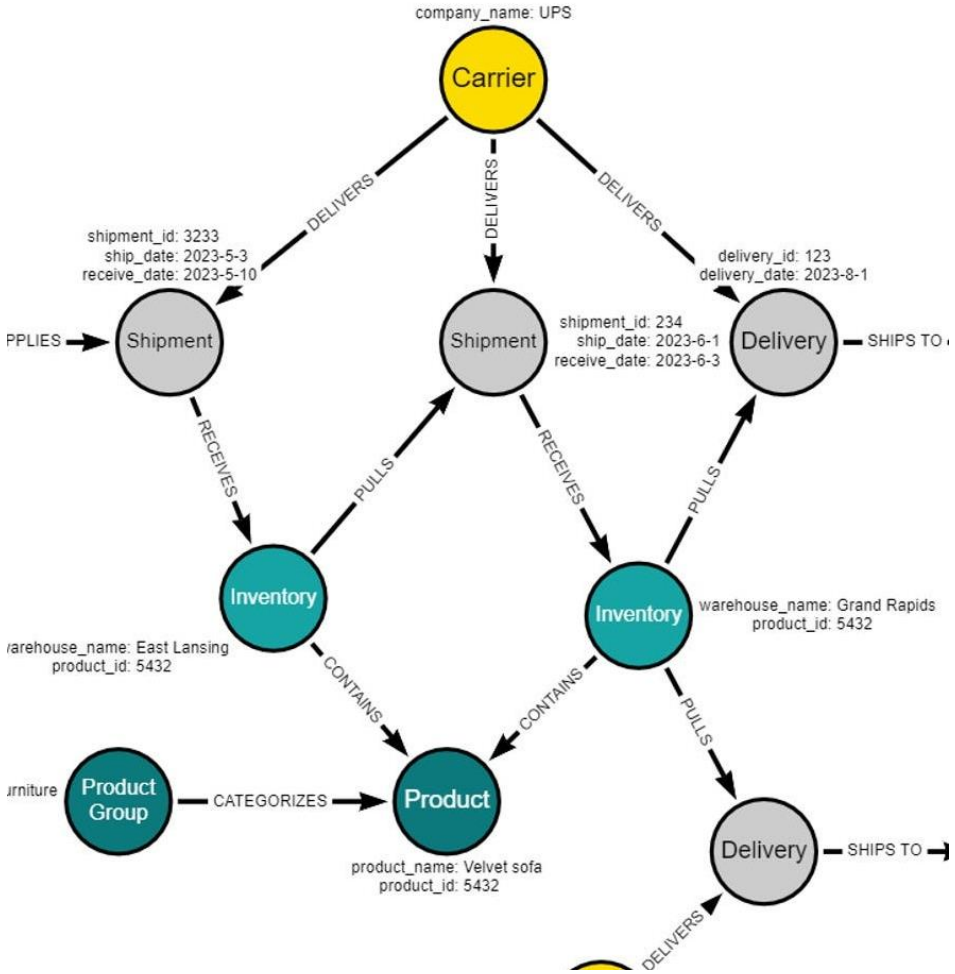
3. **Under What Conditions?**
   Determine the specific circumstances, contexts, or factors influencing these changes.

4. **What it Implies?**
   Derive the actionable insights and implications for structured knowledge and decision-making.

Transforms raw data and experiential observations into structured, actionable knowledge.

Override → Knowledge Capture

Demonstrating the system's ability to capture user-driven overrides and their reasoning.



1. Showcase Recommendation

   Present an initial system recommendation.

2. Perform Override

   Demonstrate a user actively overriding the recommendation.

3. Modify Planner

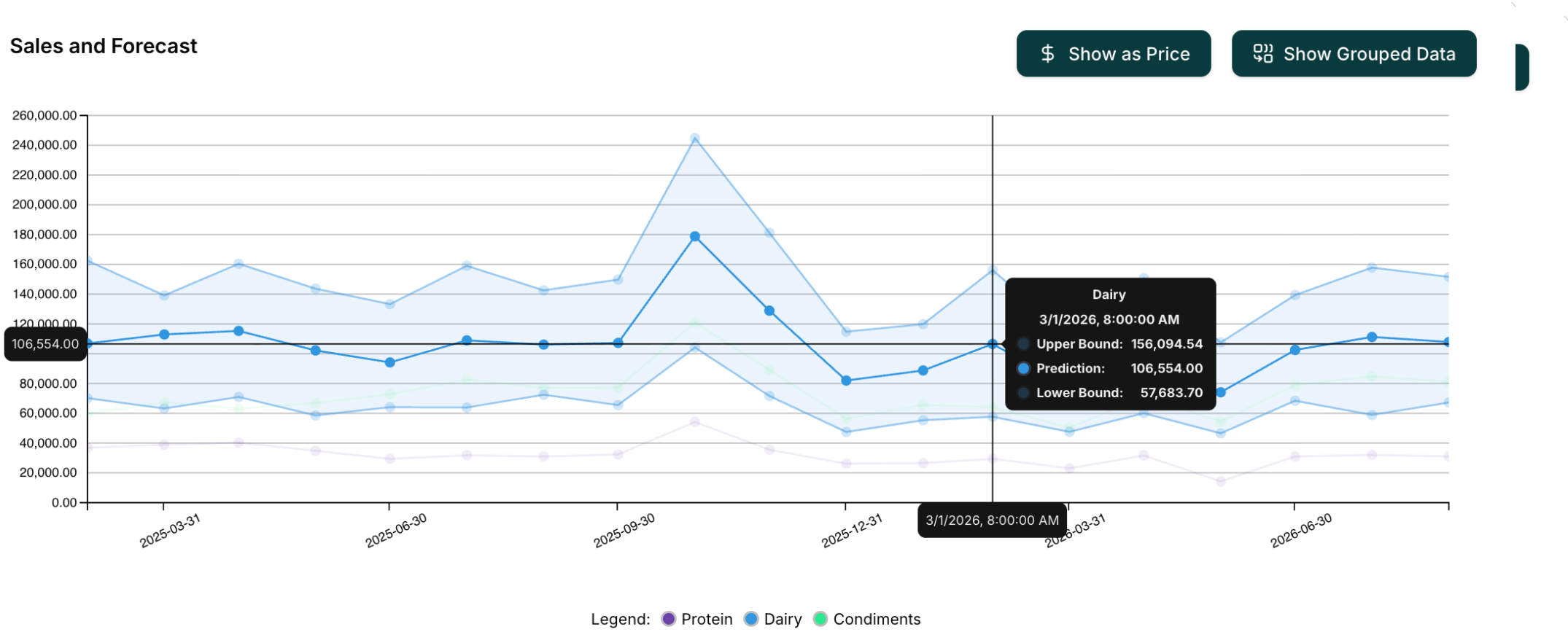
   Illustrate how the override impacts the planner or subsequent actions.

4. Capture Reasoning

   Highlight the interface for users to input their justification for the override.

5. Structured Output

   Show how the system records and structures this captured knowledge for future use.



Key Consideration

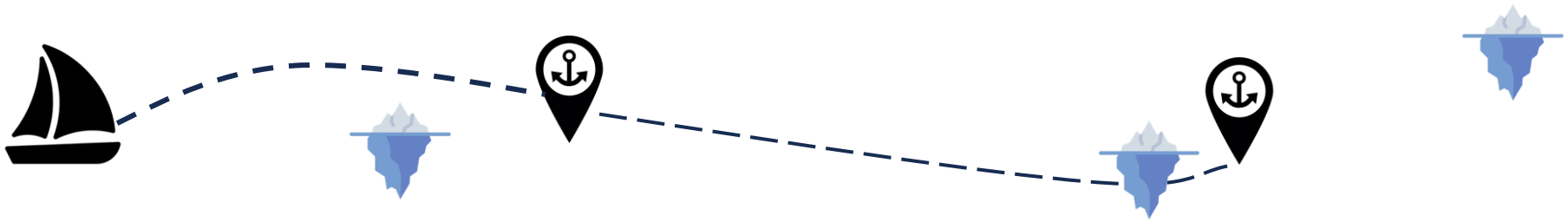
The Missing Piece

Even with extensive knowledge, the future remains uncertain and conditions are constantly changing.

Robust Optimization

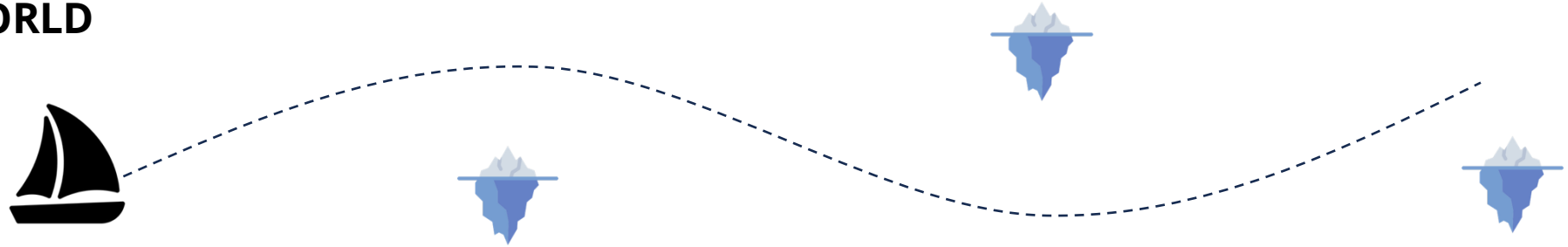
Decisions That Hold Under Uncertainty

OLD WORLD



Planning against a single assumed future

NEW WORLD

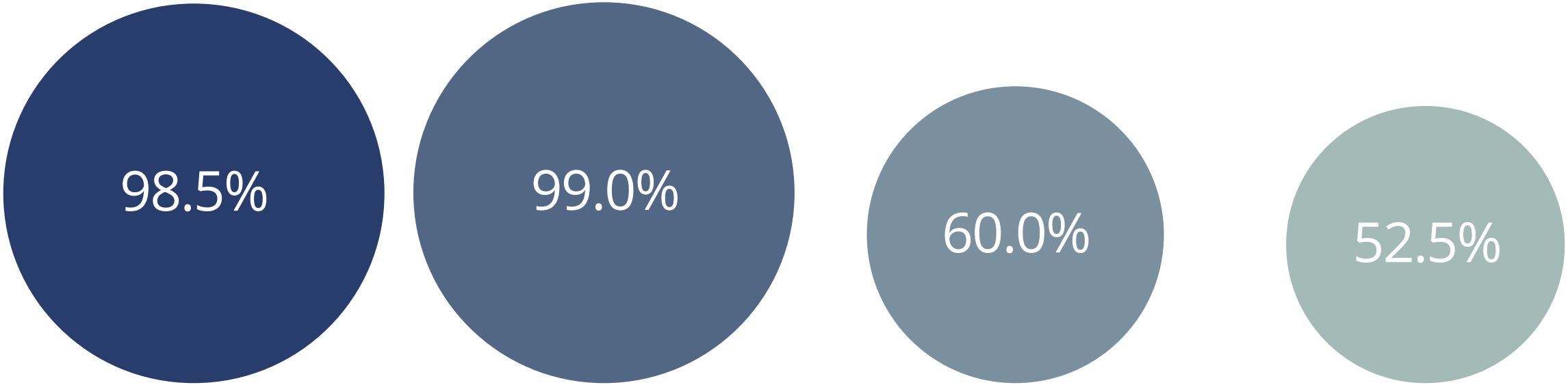


Continuous adapting across many possible futures

Robust optimization prepares for the unseen, not just the expected

Why Robust Optimization Changes Outcomes

A Comparison of Key Metrics



Service Level - Robust Optimization (% Fulfilled Demand)

Profit Capture - Robust Optimization (% Profit Captured)

Service Level - Deterministic Optimization (% Fulfilled Demand)

Profit Capture - Deterministic Optimization (% Profit Captured)

Optimizing for a single forecast collapses under uncertainty. Optimizing across scenarios preserves service and captures value.

System Loop: From Knowledge to Continuous Decisioning

1 **Data**

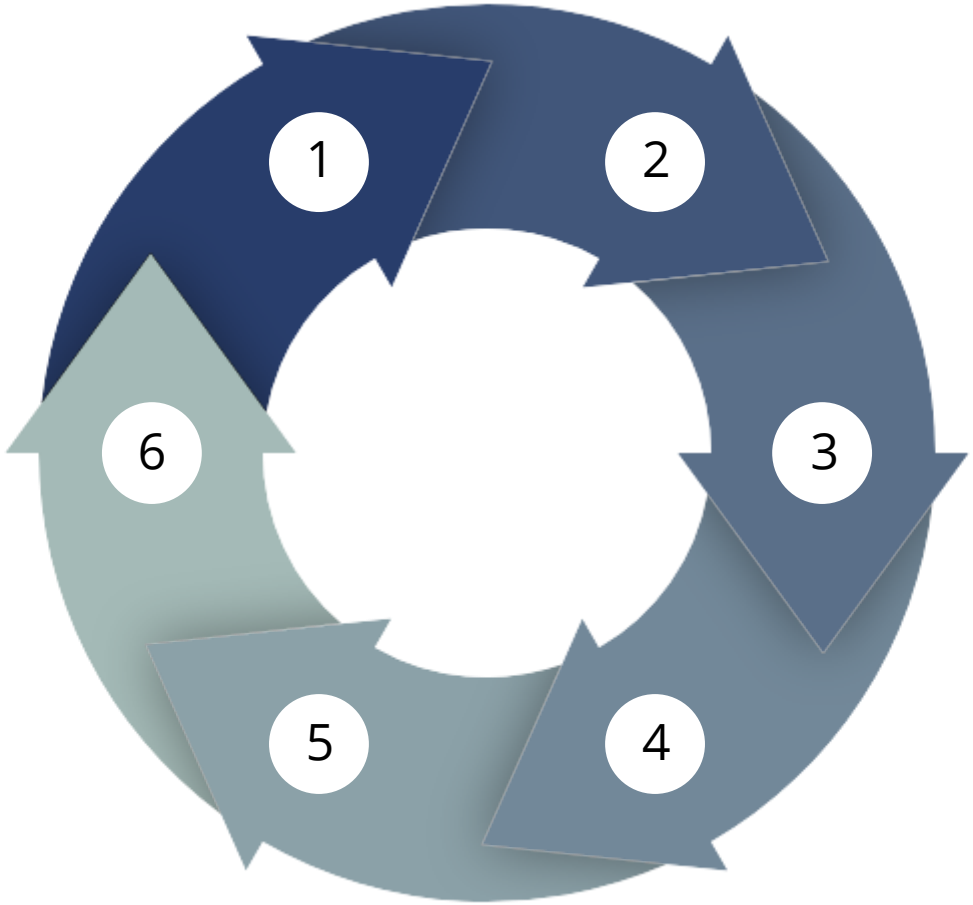
The raw input and foundation for the system.

2 **Forecast**

Predicting future states or trends based on data.

3 **Simulation**

Modeling potential scenarios and outcomes.



4 **Optimization**

Identifying the best course of action based on forecasts and simulations.

5 **Decision**

Executing the optimized action.

6 **Feedback**

Analyzing results to inform future iterations and grow the system's knowledge.

Challenges: What’s Still Hard

Real vs. Compensating Knowledge

Distinguishing genuine understanding and capability from superficial knowledge that masks underlying issues.

Planner Inconsistency

Addressing fragmented or conflicting planning processes, tools, and strategies across different teams or levels.

Organizational Root Causes

Identifying and rectifying systemic issues embedded in culture, structure, or processes that perpetuate challenges.

From Planner-Driven to System-Driven Intelligence

The Intelligence Lifecycle

Stores the Business

Explains the Business

Acts on the Business

From Signals → to Reasoning → to Decisions