

White Paper

Escaping the Planning Fallacy: Embedding Optimal Bias into Infrastructure Delivery A Mavryck White Paper | Inspired by Daniel Kahneman



Executive Summary

Despite decades of innovation in project management, cost and schedule overruns remain endemic in infrastructure. The culprit isn't just poor execution — it's flawed forecasting, driven by deep-rooted cognitive biases. This white paper explores the concept of Optimal Bias, drawn from Nobel laureate Daniel Kahneman's research, and shows how Mavryck's AI platform operationalizes this thinking to improve outcomes across rail, transit, and mega-infrastructure delivery.

The Forecasting Crisis

Kahneman and Tversky's concept of the planning fallacy explains a painful truth: "People and organizations tend to underestimate the time, costs, and risks of future actions while overestimating the benefits."

In infrastructure, this manifests as:

- Unrealistic baselines
- Poorly calibrated risk registers
- Overconfidence in deterministic CPM schedules
- Resistance to scenario-based planning

The result? Rework, rescheduling, and reactive firefighting — even when early signals were present.



Understanding Optimal Bias

Optimal Bias is not pessimism.

It is a deliberate recalibration — integrating outside evidence, historical data, and pattern-based probabilities to correct the natural optimism of project teams.

This means asking:

- How did similar projects perform at this stage?
- Are our assumptions aligned with real-world patterns?
- What are the warning signs we might be ignoring?

Yet applying this consistently at scale is nearly impossible without automation and intelligent models. That's where Mavryck steps in.



Mavryck's Response: Operationalizing Optimal Bias

Mavryck transforms Optimal Bias from theory to practice using a multi-layered intelligence engine that integrates Reference Class Forecasting, GIGO filtering, and AI-driven diagnostics.

1. Reference Class Forecasting (RCF)

- Mavryck compares current project schedules and risks against a historical database of similar activities, sequences, and durations.
- This allows probabilistic outcomes instead of static, overly optimistic forecasts.

2. GIGO: Garbage In, Garbage Out Framework

- Most forecasts fail because the input data is flawed — inconsistent metadata, duplicate actions, reversed progress, etc.
- Mavryck auto-detects and corrects these patterns, raising data hygiene scores before analysis even begins.

3. Pattern Disruption Detection

- Using time-series clustering, Mavryck identifies deviations in progress that indicate future slippage — even when status reports show "green."
- This generates real-time Optimal Bias Alerts.

4. Knock-On Impact Mapping

- Bias is rarely isolated. One flawed assumption can ripple through interface milestones, procurement awards, and handover readiness.
- Mavryck visualizes these domino effects using bow wave charts and path dependency modeling.

5. Optimal Bias Confidence Scoring

- Mavryck assigns a confidence index to forecasts based on pattern alignment, historical deviation rates, and external comparables.
- This supports better executive decision-making and accountability tracking.

Case Study Snapshot

Project Type: Transit station development

Problem: Repeated optimism in monthly status updates despite stagnant field progress.

Mavryck Intervention:

- Ran RCF on activity clusters
- Identified >60-day average slip in similar clusters across 9 past projects
- Triggered Optimal Bias Alert before slippage occurred
- **Result:** Schedule re-baselined, procurement timing adjusted, risk exposure reduced.

Industry Implications

In a world where infrastructure funding is under scrutiny and public patience is thin, Optimal Bias is no longer optional.

- Governments need it to protect value-for-money.
- Contractors need it to manage claims, margins, and performance risk.
- Owners need it to regain control over increasingly complex programs.

Mavryck's Value Proposition

Optimal Bias isn't just a philosophy — it's a computational capability within Mavryck:

Capability	Functionality	Impact
Reference Class Forecasting	Schedule & cost comparison to historic norms	Adjusts unrealistic assumptions
GIGO Framework	Input hygiene, error reversal, duplication scan	Boost Reliability of Forecast
Pattern Disruption Alerts	AI-detected divergence from norms	Enables early interventions
Knock-On Mapping	Input hygiene, error reversal, duplication scan	Reduces unexpected downstream risks
Confidence Indexing	Bias-adjusted forecasting scoring	Supports defensible decisions

Conclusion: Forecasts with Foresight

The world doesn't need another scheduling tool.

It needs a **truth-teller** — one that isn't bound by internal politics or legacy thinking. Mavryck brings that to life through **Optimal Bias Intelligence** — giving project teams the clarity, confidence, and corrective foresight they need to deliver infrastructure that performs.

Call to Action

Want to evaluate your forecast bias?

Request a scan of your current project schedule or risk register and see what Mavryck's Optimal Bias engine reveals.

References

- Smith, J. (2022). "The Role of Artificial Intelligence in Project Risk Management." *Journal of Project Management*, 10(2), 45–62.
- Jones, L., & Wang, C. (2023). "AI Applications for Project Risk Management: A Practical Guide." Project Management Institute.

Disclaimer

- The information provided in this whitepaper is for informational purposes only and should not be construed as professional advice.
- Organizations should consult with qualified professionals before implementing AI solutions in their project risk management practices.