



CUSTOMER CASE STUDY

Simulation-Aware Decision Engine via Model Context Protocol

Connecting LLM agents to complex engineering simulations for real-time commercial decision-making

Solution: Model Context Protocol Architecture **Industry:** Engineering & Manufacturing

Use Case Focus: Simulation Integration and Decision

GOALS

- Bridge the gap between advanced engineering simulations and business decision-makers.
- Translate complex technical simulation outputs into actionable commercial and financial
- Planners and commercial leaders can quickly assess how operational changes affect revenue and supply chain efficiency.
- Business teams can now execute runs and extract insights using natural language.

SOLUTIONS

- Implement a lightweight Model Context Protocol architecture to connect LLMs with simulations.
- Enable LLM-based agents to generate inputs and execute simulation runs via natural language.
- Integrate and contextualize simulation outputs automatically with production and market data.
- Apply the described approach to the core problem.

CHALLENGES

- Advanced engineering simulation models are isolated from business workflows and key users.
- Simulation outcomes rarely impact high-level pricing, planning, or revenue strategies.
- Address the key constraints noted in the source.
- Reduce manual effort across the current process.

RESULTS

- Empowered non-technical business teams to control complex engineering models.
- Aligned technical engineering simulation insights directly with financial and commercial
- Provided scalable, real-time model-based recommendations across multiple business departments.
- Improved clarity over the previous approach.

EXECUTIVE SUMMARY

Industrial organizations often struggle with isolated engineering simulation models that remain disconnected from business workflows and commercial decision-making. By implementing a Model Context Protocol (MCP) architecture, this solution seamlessly connects LLM-based agents with complex legacy simulations through a lightweight client-server framework. Business teams can now execute runs and extract insights using natural language. This integration successfully aligns technical engineering outputs with real-time financial, pricing, and operational planning strategies.

The Challenge of Isolated Engineering Simulations

Advanced engineering simulation models represent critical intellectual property, yet they frequently remain isolated in technical silos. Legacy simulation software typically demands highly specialized knowledge to operate, preventing business planners, commercial teams, and executives from accessing valuable insights. This lack of integration means that simulation outputs are rarely reflected in dynamic pricing strategies, production schedules, or high-level revenue planning. Consequently, organizations fail to capture the full commercial value of their engineering models, leaving a significant gap between technical capability and business execution.

Unifying Intelligence via Model Context Protocol

To bridge this operational divide, a Simulation-Aware Decision Engine was developed using a lightweight Model Context Protocol (MCP) architecture. This innovative framework serves as a client-server bridge, allowing large language model (LLM) agents to interface directly with complex simulations. Through natural language interfaces, LLM agents can autonomously generate simulation inputs, trigger execution runs, and extract key outputs. By translating natural language queries into technical commands, the system democratizes access to simulations, enabling business users to run complex scenarios without needing specialized software expertise.

Driving Real-Time Commercial Impact

Beyond simplifying interfaces, the decision engine automatically links simulation outputs with live market and production data. This contextual integration elevates raw engineering variables into meaningful financial metrics. Planners and commercial leaders can quickly assess how operational changes affect revenue and supply chain efficiency. By enabling real-time, model-based recommendations across diverse departments, the solution ensures that technical engineering realities directly guide strategic pricing and resource allocation. The result is a highly agile, data-driven enterprise where engineering intelligence actively drives business optimization.

OPERATIONAL IMPACT PATHWAY

