



CUSTOMER CASE STUDY

Simulation-Aware Decision Engine

BKOA_{AI}'s MCP architecture connects LLM agents with engineering simulations through a lightweight client-server framework

Solution: Model Context Protocol Architecture

Industry: Power Generation

Use Case Focus: Simulation Integration and Decision Support

GOALS

- Connect advanced engineering simulations with business planning workflows.
- Make simulation inputs and outputs accessible through natural-language interactions.
- Translate technical results into information that supports operational, commercial, and financial decisions.
- Reduce the time and specialized effort required to run simulations and interpret results.

SOLUTIONS

- Implement a lightweight Model Context Protocol architecture connecting AI agents with engineering simulation tools.
- Enable AI agents to prepare inputs, initiate authorized simulation runs, and return results through natural-language interactions.
- Contextualize simulation outputs with relevant production and market data.
- Present results in a consistent format that supports operational, commercial, and financial analysis.

CHALLENGES

- Advanced engineering simulation models are often isolated from business workflows and key decision-makers.
- Preparing and running simulations can require specialized technical expertise and significant manual effort.
- Complex simulation outputs can be difficult for nontechnical stakeholders to interpret and apply.
- Simulation results are not always readily combined with production and market data for planning purposes.

RESULTS

- Expanded access to engineering-simulation insights for planning and commercial teams.
- Reduced the manual effort required to prepare simulation runs and interpret their results.
- Connected engineering outputs with relevant commercial and financial context.
- Supported faster, better-informed scenario evaluation across business functions.

EXECUTIVE SUMMARY

BKOAI's Simulation-Aware Decision Engine uses a lightweight Model Context Protocol (MCP) architecture to connect AI agents with engineering simulation tools. The approach makes simulation inputs and outputs accessible through natural-language interactions, helps reduce the specialized effort required to prepare and run simulations, and contextualizes results with relevant production and market data. The goal is to make engineering-simulation insights easier to use in operational, commercial, and financial decision-making.

Connecting Simulations with Business Workflows

Advanced engineering simulation models are often isolated from business workflows and key decision-makers. Preparing and running simulations can require specialized technical expertise and significant manual effort, while complex outputs can be difficult for nontechnical stakeholders to interpret and apply. Simulation results are also not always readily combined with production and market data for planning purposes.

Natural-Language Access through MCP

The solution implements a lightweight Model Context Protocol architecture that connects AI agents with engineering simulation tools. AI agents can prepare inputs, initiate authorized simulation runs, and return results through natural-language interactions. This makes simulation capabilities more accessible while reducing the time and specialized effort required to run simulations and interpret their results.

Decision Context and Business Impact

Simulation outputs are contextualized with relevant production and market data and presented in a consistent format for operational, commercial, and financial analysis. The result is broader access to engineering-simulation insights, lower manual effort, stronger commercial and financial context, and faster, better-informed scenario evaluation across business functions.

OPERATIONAL IMPACT PATHWAY

