

CUSTOMER CASE STUDY

Simulation-Aware FMEA Analysis

BKOAI developed a simulation-aware FMEA system that combines Deep Search Agents with the Agent-as-a-Service (AaaS) framework to make risk analysis more adaptive, scalable, and data-driven.

Industry: Power Generation

GOALS

- Transition from static, manual risk analysis to dynamic, data-driven reliability.
- Accelerate decision-making through parallelized failure analysis.
- Integrate historical, operational, and predictive data into one workflow.
- Shift FMEA from reactive reporting to proactive risk prevention.

CHALLENGES

- Traditional FMEA relies on static knowledge bases that require manual updates.
- Sequential investigations follow fixed paths, slowing decision-making.
- Siloed data prevents integration of simulations, maintenance logs, and live sensors.
- Failure analysis often occurs only after events rather than anticipating risks.

SOLUTIONS

- Deployed an Orchestrator Agent to run parallel, multi-agent analysis workflows.
- Integrated Graph, Document, Log, and Predictive Agents for comprehensive analysis.
- Utilized a Synthesizer Agent to unify knowledge and deliver actionable predictions.
- Combined FMEA records, simulation results, maintenance histories, and live sensor data.

RESULTS

- Enabled dynamic adaptation by continuously incorporating new data and simulation results.
- Reduced analysis timelines significantly through simultaneous agent execution.
- Shifted reliability workflows from reactive reporting to proactive risk prevention.
- Delivered integrated intelligence across historical, operational, and predictive insights.

EXECUTIVE SUMMARY

BKOAI developed a simulation-aware FMEA system that combines Deep Search Agents with the Agent-as-a-Service (AaaS) framework to make risk analysis more adaptive, scalable, and data-driven. An Orchestrator Agent coordinates Graph, Document, Log, and Predictive Agents, while a Synthesizer Agent combines their findings. By bringing together FMEA records, simulation results, maintenance histories, and live sensor data, the workflow supports faster analysis, continuous adaptation, and a shift from reactive reporting to proactive risk prevention.

Moving Beyond Static FMEA

Traditional FMEA relies on static knowledge bases that require manual updates, while sequential investigations follow fixed paths and slow decision-making. Data silos also prevent simulations, maintenance logs, and live sensor data from being analyzed together.

Parallel Multi-Agent Analysis

An Orchestrator Agent runs parallel analysis workflows across specialized Graph, Document, Log, and Predictive Agents. A Synthesizer Agent then unifies the findings into actionable predictions, combining historical FMEA knowledge with simulation, maintenance, and live operational data.

From Reactive Reporting to Proactive Risk Prevention

The architecture continuously incorporates new data and simulation results, reducing analysis timelines through simultaneous agent execution. It provides integrated intelligence across historical, operational, and predictive insights and shifts reliability work toward proactive risk prevention.

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