

Generative AI Conversational Analytics Dashboard Transforms Mining Operations Data Access

The Client

CreativeBitsAI is a US-based technology company, delivering advanced artificial intelligence solutions, including AI-powered recruitment tools and e-commerce content optimisation, to businesses across multiple diverse industry sectors worldwide.

Business Challenges

CreativeBitsAI's end client operates mining production facilities generating vast volumes of data across disparate enterprise systems, with no unified interface for cross-domain queries, SQL access, or natural language search.

- Fragmented data across production, HR, and document systems prevented cross-domain analysis
- Operations and HR teams relied on manual queries and IT support for routine metrics
- Safety manuals and compliance documents lacked searchable, natural language retrieval
- Supervisors lacked real-time visibility into production anomalies and trends

The Solution

MTSL designed and deployed a Generative AI-powered conversational analytics dashboard on AWS, giving users role-based, natural language access to production, HR, and document data through a unified chat interface.

- Three chatbot modules cover production KPIs, HR attendance, and document Q&A with citations
- Amazon Bedrock powers foundation model inference across all conversational modules
- Amazon RDS PostgreSQL and Amazon S3 handle structured and document data storage
- AWS Lambda supports serverless compute, ensuring scalability and cost-efficiency

Impact Delivered

The conversational analytics platform reduced data retrieval time by 95 percent, resolved over 85 percent of routine queries without IT support, and achieved high accuracy across all modules.

- NL-to-SQL accuracy reached 92 percent, improving to 98 percent with query refinement
- Document Q&A achieved 91 percent retrieval relevance, cutting lookup time by 80 percent
- P95 latency remained at 3.6 seconds, within target
- Anomaly detection surfaced 12 production deviations in the first month of use

Technology Stack

- Amazon Bedrock
- Amazon RDS (PostgreSQL)
- Amazon S3
- AWS Lambda
- Generative AI/LLM Models
- Retrieval-Augmented Generation (RAG)
- Serverless Architecture

Services Delivered

- Generative AI Solution Design
- Conversational AI Development
- Cloud Architecture on AWS
- RAG-Based Document Search Implementation
- Role-Based Access Control Setup
- Application Testing & Deployment

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