Case Study by :
Bitvivid Solutions Pvt. Ltd.
On RTIAS –
Rake Tracking
Intelligence and
Analytics Solution

BitVivid
Analytics Redefined

Rake Tracking Intelligence and Analytics Solution
Customer: Manoj Kumar (AGM)
Company: Adani Enterprises

Introduction:

Sarguja Rail Corridor Pvt Ltd (SRCPL), a subsidiary of Adani Logistics, operates a 75-kilometer single-line rail corridor connecting the Parsa coal mine to Surajpur Railway Station in Chhattisgarh. To enhance operational efficiency, SRCPL partnered with Adani's Natural Resources (NR) Business Unit to develop an advanced AI-powered WebApp. The objective was to automate data acquisition, provide real-time insights, and optimize various key performance indicators critical to the business.

Challenges Faced:

SRCPL faced several challenges in their rail operations, including:

• Manual data acquisition and processing from operations teams at Adani and
CRIS's data centre.
• Limited visibility into waiting time at stations and transit time between
stations.

• Operational bottlenecks leading to increased Turnaround Time (TAT) of rakes.

• Inefficient resource allocation and lack of actionable information for decision-making.

Analytics Approach:
The analytics team at NR BU adopted the following approach to address the challenges and optimize rail operations:

• Leveraged near real-time data from CRIS's data centre and operations teams to develop an AI-powered WebApp.

• Implemented modular restructuring of data for live filtering and processing.

• Automated human-operated processes to reduce repetition and increase efficiency.

• Calculated key metrics from raw data and stored them for easy access and future analysis.

• Utilized best practices and the latest web technologies to create transparent and well-documented components

Implementation and Benefits:

The implementation of the AI-powered WebApp led to several benefits for SRCPL:

• Real-time Data Acquisition: The WebApp automated the acquisition of data from operations teams and CRIS's data center, ensuring up-to-date information for analysis.

• Enhanced Operational Insights: The WebApp analyzed waiting time at stations, transit time between stations, and identified operational bottlenecks, enabling proactive decision-making to minimize TAT.

• Improved Resource Allocation: By providing actionable information, the WebApp optimized resource allocation, leading to increased productivity and operational efficiency.

• Advanced Dashboard: WebApp's AI-powered dashboard offered real-time information on rakes, critical KPIs, and other useful insights for efficient management and decision-making.

Results and Future Scope:
The implementation of the AI-powered WebApp yielded significant results for SRCPL:

• Reduced Turnaround Time (TAT): By identifying and addressing operational bottlenecks, SRCPL achieved a considerable reduction in TAT, enabling faster and more efficient rail operations.

• Improved Productivity: The optimized resource allocation and actionable insights led to enhanced productivity and overall operational performance.

 • Data-Driven Decision-Making: The availability of real-time information and key metrics empowered the management team to make informed decisions and drive continuous improvement.

Looking ahead, SRCPL can consider expanding WebApp's capabilities to include predictive analytics, anomaly detection, and route optimization algorithms for further optimization of their rail operations.

Conclusion:

Sarguja Rail Corridor Pvt Ltd successfully leveraged AI and data analytics to transform their rail operations. The implementation of the AI-powered WebApp enabled real-time data acquisition, operational insights, and improved decision-making. By addressing bottlenecks and optimizing resource allocation, SRCPL achieved reduced TAT and enhanced productivity. The project testament to the power of AI and analytics in the transportation industry, driving efficiency and enabling sustainable growth.

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