Case Study: Transportation & Logistics

Mining AI for Added Value in Worker Accommodations

A minerals and mining company leverages data analytics to optimize accommodations for its mineworkers.

On its face, mining seems a simple business. But mining companies are massive, and coordinating the labor necessary to operate multiple facilities, often in remote locations, is a daunting and expensive task.

Cognizant helped a global mining and minerals processing company address the complexity of assigning accommodations to its thousands of employees and contractors, optimizing use of its multiple housing facilities and lowering costs.

At a glance

We helped a multinational mining and raw material production company optimize workforce accommodations at worker camps for its mines, increasing occupancy rates and lowering costs.

Outcomes

Our solution optimized accommodation requirements at the least cost, automating room assignments by analyzing a complex set of variables and it provided:

- immediate ROI, with year-one savings of US $4 million.
- $20 million cost savings forecasted from optimal room utilization.
- Forecast a 50% reduction in costs due to no-shows or records and reporting errors.

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Cognizant

Mining data for value

Our client asked us to address the complex challenge of billeting thousands of miners and operational personnel at camps it owns and others it contracts for. Its mines and accommodation villages are dispersed across a large region; workers can stay at multiple villages, and each village can house personnel from multiple mines. Mine personnel work varying schedules: many are seven days on, then seven days off; while others' schedules are sporadic. Further, contractors and service providers do not enjoy the same billeting privileges as employees.

Costs are lower at owned villages, but contracted accommodations provide flexibility in handling capacity. This leads to complex pricing terms. Prices for billeting at contracted villages change year to year — and often, during the year. And room costs vary according to the number of rooms reserved.

Our client relied on scheduling software to assign lodging, but its system was neither flexible nor fast. It managed single facilities and could not account for the variables of differing schedules, duration of stays, time, distance and cost. Creating and maintaining complementary schedules for the multiple camps required a high level of clerical work.

Accommodating change

Using a database of historical bookings, we developed a pilot project for secure data analytics solutions that could process current occupancy data, manage schedule changes and automate reporting and reviews. We then designed and built a scheduling optimization engine that accounts for these variables — individuals' schedules, their preferred location, distance and costs.

Our solution optimizes allocations for permanent bookings and those made ad hoc. It allows rapid changes in real time in the event of illnesses, noshows and unexpected contingencies. We also identified possible back-to-back pairs: employees and contractors with complementary working rosters.

Short-term, our solution ensures daily accommodation needs are met and provides a dashboard to track utilization and costs. Longer-term, it learns usage needs based on past bookings over time. It can anticipate and forecast accommodation needs at different locations for the next five years, to reduce the cost of incorrect planning and manage the risk of under utilization.

We consolidated these features into a single digital analytics platform on the cloud using Amazon Web Services (AWS). We used "R" programming to develop advanced analytics to integrate with the client's booking system. Outputs from our array of optimization solutions are provided using a Tibco Spotfire visualization tool, allowing quick, easy decision making by the accommodations team and dramatically reducing the time spent by schedulers.

Drill deep to deliver value

Our AI-driven optimization tools provide actionable insights, from reducing waste from booking discrepancies, to determining smart allocations for increased utilization that would enable the accommodations team to improve all KPIs including availability, utilization rates and compliance. The consistent, repeatable and self-learning nature of these solutions will help add value for a long time.

Optimizing occupancy rates has a direct impact on the bottom line. Our model forecast costsavings of more than $4 million in year one, maximizing use of existing facilities, concentrating services where and when needed, and halving the cost of no-shows and errors in record keeping.The matching and scheduling algorithms for the optimization engine we developed are now being implemented in other parts of the business.

For more information, visit www.cognizant.com/ai

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Cognizant's Manufacturing and Logistics business unit operates as a trusted partner to global manufacturing leaders, helping them accelerate business performance in the digital world. The unit is recognized for its forward-looking approach by industry gurus, such as IDC MarketScape, which bestowed on it a "Leader" rating for service lifecycle management. Our business consulting professionals ensure that manufacturing and logistics clients receive exceptional business results from their technology investments and sourcing programs. Our domain solutions leverage digital technologies to build smart products, connect with digital consumers, provide real-time visibility into manufacturing operations, and automate knowledge work with cognitive computing. Learn more at www.cognizant.com/manufacturing.

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As part of Cognizant Digital Business, Cognizant's Artificial Intelligence Practice provides advanced data collection and management expertise, as well as artificial intelligence and analytics capabilities that help clients create highly-personalized digital experiences, products and services at every touchpoint of the customer journey. Our AI solutions glean insights from data to inform decision-making, improve operations efficiencies and reduce costs. We apply Evolutionary AI, Conversational AI and decision support solutions built on machine learning, deep learning and advanced analytics techniques to help our clients optimize their business/IT strategy, identify new growth areas and outperform the competition. To learn more, visit us at www.cognizant.com/ai.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 195 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us @Cognizant.

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