

AMAZON – CROSSDOCK

CROSSDOCK INBOUND VISIBILITY AND LABOR OPTIMIZATION

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As a world leader in retail, Amazon strives to be Earth’s most customer-centric company. In an attempt to achieve this vision, the business continuously works to improve on a vast network to improve customer experience each year. To drive innovation within the supply chain, Amazon’s Fulfillment Execution and Data Science (FEDS) team leverages technology and operations to develop and deploy data rooted solutions for the fulfillment network. Specifically, the Inbound Research Science team supports operations at crossdock warehouses. The purpose of a crossdock is to reduce costs by consolidating freight and optimally distributing units at fulfillment centers across the country.

As the first point of contact for many incoming units, crossdock play a vital role in the supply chain, and any variations or delays at crossdock can significantly impact downstream activities. For this reason, optimized labor allocation and hiring decisions are essential to ensuring Amazon meets customer promise. The FEDS Crossdock Tauber team was challenged with providing better visibility of incoming volume, flow, and backlog for upcoming weeks. With enhanced inbound accuracy, managers can better plan and hire labor to meet the required work demand. Better planning and hiring results in improvements in associate productivity and reductions in unhealthy labor and backlog buffers.

The Tauber team initially focused on doing a current state assessment of the labor planning process. Next, the team explored potential data sources and analyzed different prediction techniques. Using a statistically driven approach, the Tauber team developed a forecasting method for a pilot location. Working with crossdock leadership, the team initiated a controlled launch and performed validation and testing on the preliminary forecast model. After several iterations of fine-tuning the model and incorporating senior management feedback, the model was expanded and optimized for Amazon’s entire crossdock network. A deliverable for the project that the team developed and published was a dynamic dashboard to both visualize and automate the forecasting tool. The server-based dashboard graphically presents actuals and predictions for volume, flow, and backlog over time and provides historical prediction accuracy. The tool was presented to all crossdock leadership and received positive responses. In addition to making improvements in prediction accuracy, the Tauber team’s forecasts increase granularity with daily predictions. The project demonstrated potential savings in both labor hours and costs, ultimately improving operations of the crossdock network.