GENERAL MOTORS

Improved Dashboards for Throughput Analysis

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General Motors (GM) is a $193B company which has pushed the limits of transportation for over 100 years. Recently, however, the company's manufacturing department has faced issues with throughput bottleneck analytics due to inconsistencies in data structures and analysis methods used within a plant and across plants. Specifically, an internal project conducted in 2019 found that 27 tools are used across all 14 GM North American (GMNA) Vehicle Assembly Plants with different sources of raw data are used for the total plant analysis due to varying preference, familiarity, or availability of the expert. No tool currently exists that directly compares the results of various methods side-by-side, and enabling technologies are complicated for use by the end-user. Furthermore, subject matter experts expressed concerns about spending large amounts of time manually identifying data collection issues and bottlenecks.

To address these enhancements, the team first created a single dashboard aggregating results from two different analysis tools, WebTIP and the Bottleneck Indicator Tool (BIT), which are both used in finding bottlenecks at a plant. Second, the team implemented a navigation tool and flexible date and shift selectors that enable users to easily move between reports and select desired date ranges or shifts of interest. Third, the team created functionality to automatically confirm the credibility of data values from WebTIP and BIT during the chosen time and shift. Lastly, recommendations such as methods to implement the dashboard through GM IT servers were documented and shared with the team.

The team faced challenges such as a 4-week delay, adapting to a virtual work environment, and issues working with raw data. However, the team created a polished dashboard and was able to iteratively receive feedback from project stakeholders and potential end-users at a GMNA manufacturing plant. The feedback received was immensely positive and the team had time to adapt the dashboard to feedback. In the future, the dashboard will act as a framework to build other reporting tools at all plant levels.

As a result of utilizing the proposed dashboard, the pilot plant which offered feedback could save $0.36M per year with avoidance of overtime and the organization could avoid $5.7M as a fixed cost for tool development and maintenance. The tool could then be rolled out to all 14 plants in GM North America in the future to generate $5.0M per year in cost avoidance.