Overview
The sponsor, TMP, wanted to validate their proposed plant layout while also looking to improve any aspects of it in terms of overall flow through the system.

Objectives
- Prove current layout model is adequate through Simio
- Recommend improvements to minimize walking distances via Muther’s Layout
- Recommend improvements to maximize efficiency and utilization and lessen worker fatigue
- Create guides for Muther’s Layout and assembly line balancing in order to implement these tools when the new plant is built
- Recommend Lean techniques as next steps for new manufacturing line

Approach
In order to solve the flow optimization problem, various approaches were taken to validate and improve the future layout. First, a flow diagram was created that shows the overall system of flows on the manufacturing floor. From this model, a simulation was created in Simio that provided different scenarios of how materials move through the manufacturing floor. This model provided the team with validation that the layout given to the team was optimal but could benefit from minor improvements. With this information, Muther’s layout was created. This tool showed which machines should be moved and what the decrease in walking distances are. The information from Simio and Muther’s layout allowed the team to create a final drawing of the layout and a final list of improvements to suggest to the sponsor. In addition, lean improvements were researched and suggested in order to make further improvements when the plant is built.

Outcomes
Based on the results expressed above from the three tools utilized, the layout proposed by TMP was validated with only minor improvements to be suggested, namely from Muther’s Layout Tool and overall general lean recommendations.

The improvements made to the travel distances through the Muther’s Layout analysis were significant and require no cost. The improvements will simply consist of reorganization of the prep and mold tables, changing the designated area of the Kroger operation, moving the panel and door stacks, and moving one decoiler to lessen the unnecessary distances which operators travel. These changes combined allowed for a 17.94% improvement to the final Muther’s Layout value. This is the overall percent improvement to the entirety of the system possible which includes walking distances, machine layout, and more as denoted above.