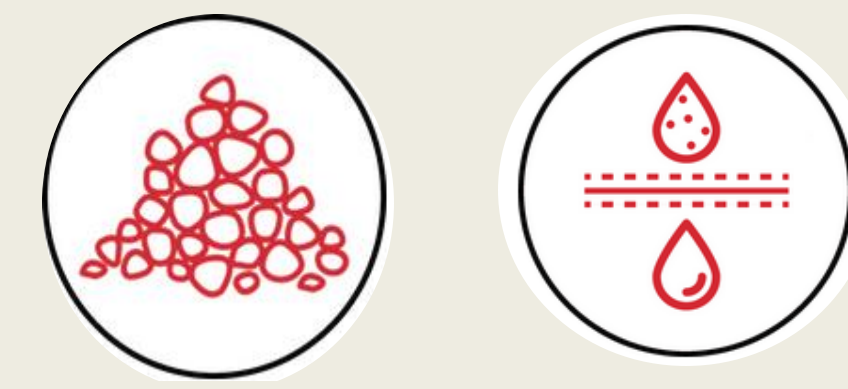


## Client Background



- Family Owned and operated since 1917
- Custom gravel and sand particles for diverse applications
- Headquartered in Eau Claire, WI with plants in Texas and North Carolina

*Red Flint can deliver precisely what you want, where you want it, when you want it and how you want it delivered.*

## Problem Statement

Due to an increase in order quantity, Red Flint management has seen an increase in their average lead time, preventing them from meeting the needs of all their clients.

The goal of this project is to provide Red Flint management with an automated method for scheduling to reduce lead times and delayed deliveries, while minimizing the need for additional training due to its implementation

## Methodology

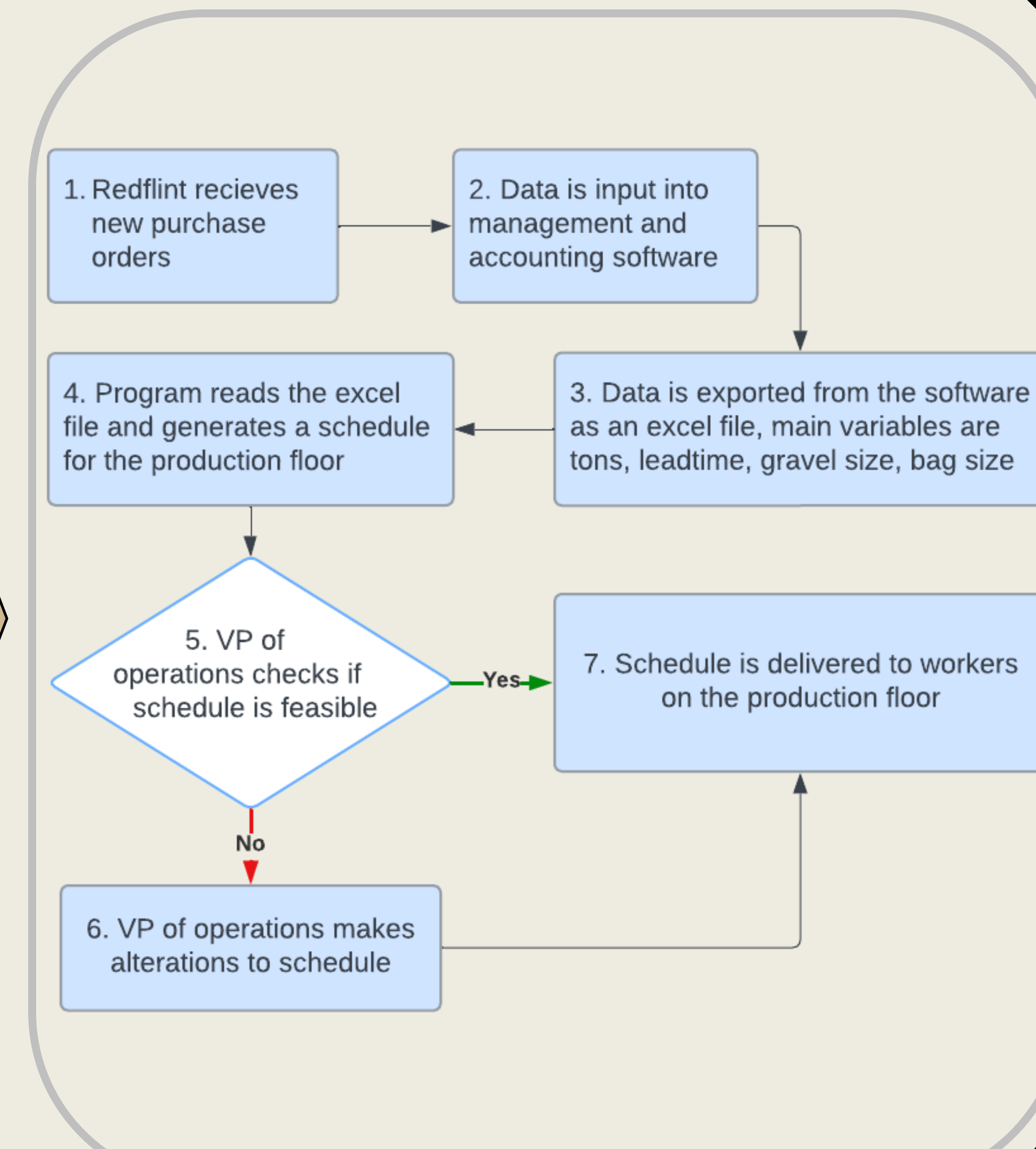
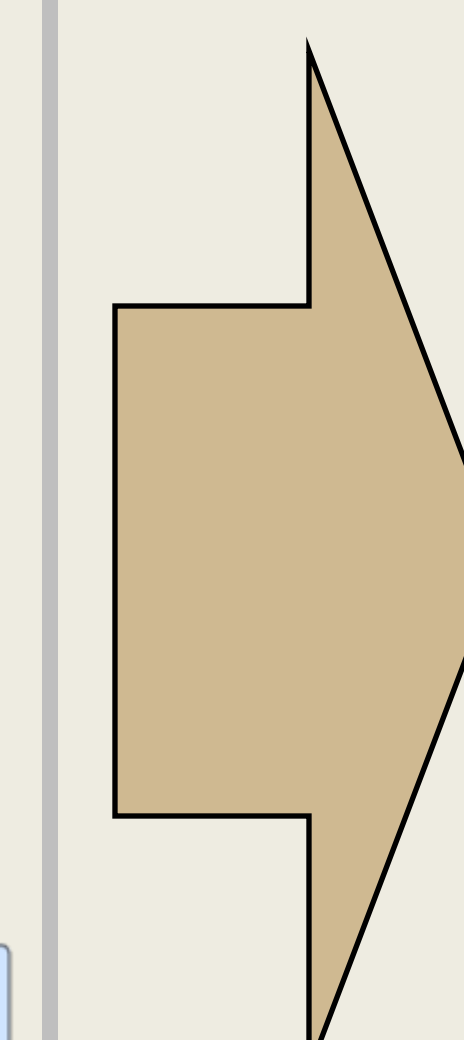
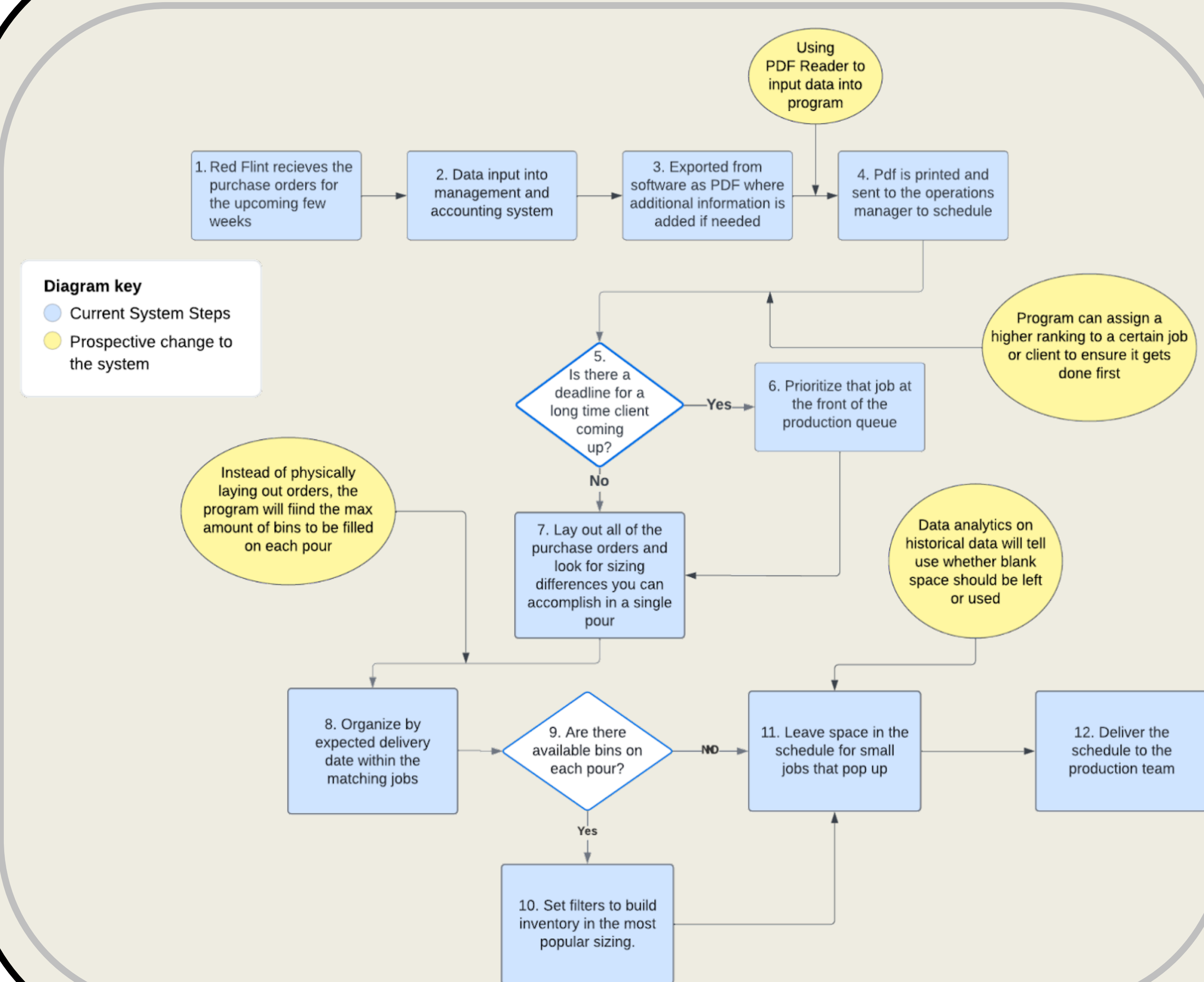
The Team's solution focused on reducing any unnecessary steps in the process to simplify the path from receiving an order to producing that order, this was done by:

- Remove the need for paper copies throughout the process
- Save the time of valuable members of the Red Flint team
- Reduce unnecessary error due to time constraints

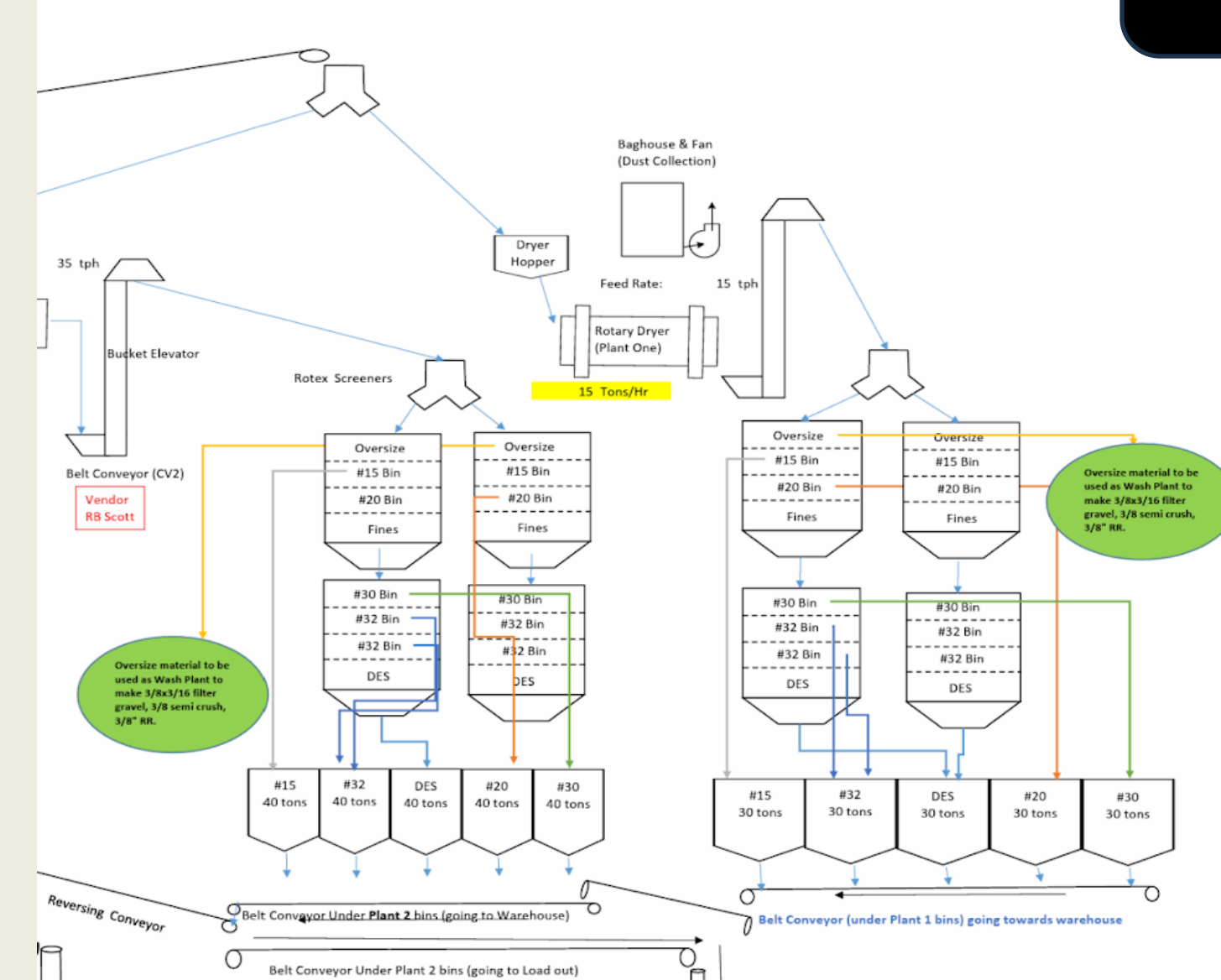
With these goals in mind the team developed an algorithm to create a schedule for the production team, taking the information directly from the accounting software. Following is the logic within the algorithm:

1. Combine orders that share bag size and gravel size
2. Assign orders a score based on tons and lead time
3. Group scored orders based on existing filter combinations, prioritizing the highest order score and generating a total score
4. Select highest total score and set as first job in production schedule and remove scheduled orders
5. Repeat the process until all orders have been scheduled

## System Evolution



## Context



- Four bins are used to store gravel before bagging, bins must be emptied to store a new particle size
- Filter combinations dictate the targeted particle size, with 6 sizes being produced per combination
- The percent yield is different for each filter combination
- Often difficult to target more than two bins

## Discussion

### Impact

- Save VP of operations and operations manager ~5 hours a week
- Allows last minute orders to be considered by facilitating rapid rescheduling
- The created algorithm that can be expanded to function in other locations

### Future Steps

- Project the bin level after completion of each order
- Investigate improvements to bagging line to accommodate increased yield
- Improve use of accounting software, make use of unfilled fields for more accurate data