The capstone team was to recommend an amount of labor and fixed costs.

With the forecasted growth, and the addition of HID’s card programing printing department currently has 6 Emperor machines.

The objective function of our tool is to minimize labor and fixed costs.

Data collected from the forecasted demand as well as the peak demand on each day. Given the limited space constraint, we have multiple layout options to choose from.

Using data HID Global has collected over the last 2 years, Dr. Clara Novoa was able to come up with a 2019 forecast and due to a lack of planning, more overtime was accumulated.

In finding an optimal number of machines to implement, the capstone team will make layout revision recommendations.

The capstone team recommended to purchase 2 Emperor machines which they mainly use to produce contactless / contact smart cards with less overtime accumulated.

Using Holt-Winters method, we were able to come up with a 2019 forecast. By minimizing the error between 2018 and the forecasted 2019, we were able to make the forecast more accurate. We noticed a 3.1% increase between each year. To forecast 2020 and further years, we shifted the 2019 forecast up 3.1% each year.

The factors taken into consideration when developing the methodology application were as follows:

❖ Salary management costs
❖ Hourly labor costs and fixed costs
❖ Emperorr machine start-up costs
❖ Forecasted hourly demand
❖ Capital costs to find an optimal number of machines to implement
❖ Discrete Capacity-based tool
❖ The objective function of our tool is to minimize labor and investment costs to find an optimal number of machines to implement within the department.

The schedule for the implementation of 2 Printing Machines for the 2020 production.

The capstone team recommends the purchase to two additional printer machines for the 2020 production.

Not for the sake that the ROI for two machines is greatest initially but for the reason the ROI for two machines will begin to grow in time, while the ROI for one machine will begin to decrease.

Using a linear programming problem produce an optimal amount of 2 additional machines. After filtering, we were able to compile individual orders into a complete sum of that day giving us the demand for that day.