## Our Solution

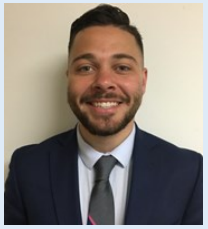
To improve the current process, the team has generated a solution that will allow Iron Mountain employees to make more informed decisions regarding the acquisition and maintenance of industrial tools. The solution consists of a series of algorithms built in Excel that will utilize financial data and equipment records to compare the financial implications for warehouse equipment according to the following questions:

1. Repair or acquire new?
2. Purchase or Lease?
3. What is the optimal tool for the job?

Beyond the generation of these comparisons, the solution visualizes these decisions graphically over predetermined lengths of time.

## About Us

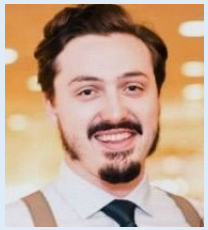
Upon graduation, Otis will be seeking employment in the field of Data Analytics.



Upon graduation, Nick will be working for UPS as a Plant Engineering Supervisor.

Upon graduation, Rob will be working for L3 Technologies—Aviation Products as a PMO Analyst.

Upon graduation, Alex will be seeking employment in the field of Data Analytics.



Upon graduation, Jake will be seeking employment in either Data Analytics or Logistics.

# Optimizing Financial Decisions for Asset Maintenance

IRON MOUNTAIN®


Iron Mountaineers

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Advisor: Eirik Hole
TA: Tyler Shiling

## Problem Statement

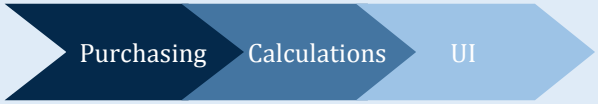
Asset management firm Iron Mountain Capital has a fleet of warehouse machinery in its various facilities across the country. The implementation of an optimized fleet management strategy would save Iron Mountain millions of dollars on its warehouse equipment. Under its present policies, Iron Mountain makes asset management decisions based upon intuition alone. Managers make independent decisions each time a piece of equipment needs maintenance or replacement. There is no mathematical approach to these decisions, making them effectively random. There are no formal channels of communication between local plant managers dedicated to hardware management – so there is essentially no information sharing. The existing system has arisen as a stopgap measure to meet an immediate need for working machinery, given that there is no cost-minimizing strategy defined. Business operations must continue but without the time or resources to consider all of the information. This forces a decision-making approach based upon feeling rather than facts.

## Proof of Concept

After selecting the piece of equipment to be reviewed from the dropdown menu, the make, model, and serial number are used to inform the rest of the program on what information to analyze.

For the two main calculations, NPV and Reliability, the following diagrams display which sources are needed to perform calculations and relay results to the user.

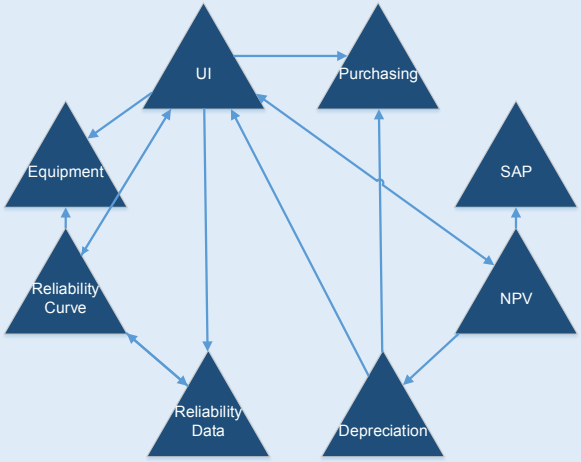

Information Flow for Reliability Curve




Information Flow for NPV

*Calculations: Depreciation and NPV tables

The overall connectedness is further exemplified by the network web below.



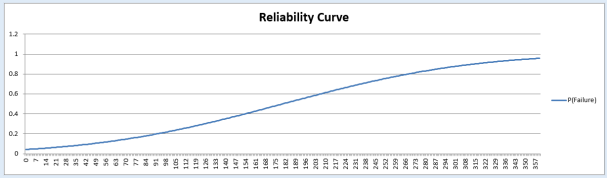

## Results

Once all the appropriate piece of equipment is selected, the necessary calculations are performed almost instantly, and the user is presented with the financial implications of the buy, lease-to-buy, and full lease alternatives.

| | Cost | NPV | Term | |
|---|---|---|---|---|
| **Buy New** | $10,000.00 | $33,955.61 | 0 | months |
| **Lease New:** | $200.00 | $34,598.84 | 60 | months |
| **Lease to Own:** | $250.00 | $33,920.89 | 60 | months |

Above: NPV Results of Yale MPE080-F-B890 from User Interface

Aside from these results, the user is also presented with a reliability curve, displaying the equipment's probability of failure of time, as well as other key metrics about the piece of equipment.




| | |
|---|---|
| **Meter Reading (Hours):** | 1166 |
| **Age (Years):** | 8 |
| **Yearly Usage (Hours/Year):** | 145.75 |
| **Monthly Usage (Hours/Month):** | 12.15 |
| **Net Present Value:** | $150.76 |
| **Current Failure Probability:** | 1.65810625 |
| **Occurance of Maintenance:** | 1 |