

Problem

- Manufacturing process **does not include** any steps for tracking non-stock part usage
- Non-stock parts are often retained but **not systematically added** to inventory or scrapped
- Some parts are ordered multiple times because of the **lack of item visibility**

Objective

- Create a solution to manage non-stock inventory
- Implement a physical storage layout
- Design a **data-driven tool** to help the company add items to inventory and track movement of non-stock parts

Excel Tool

Parameters

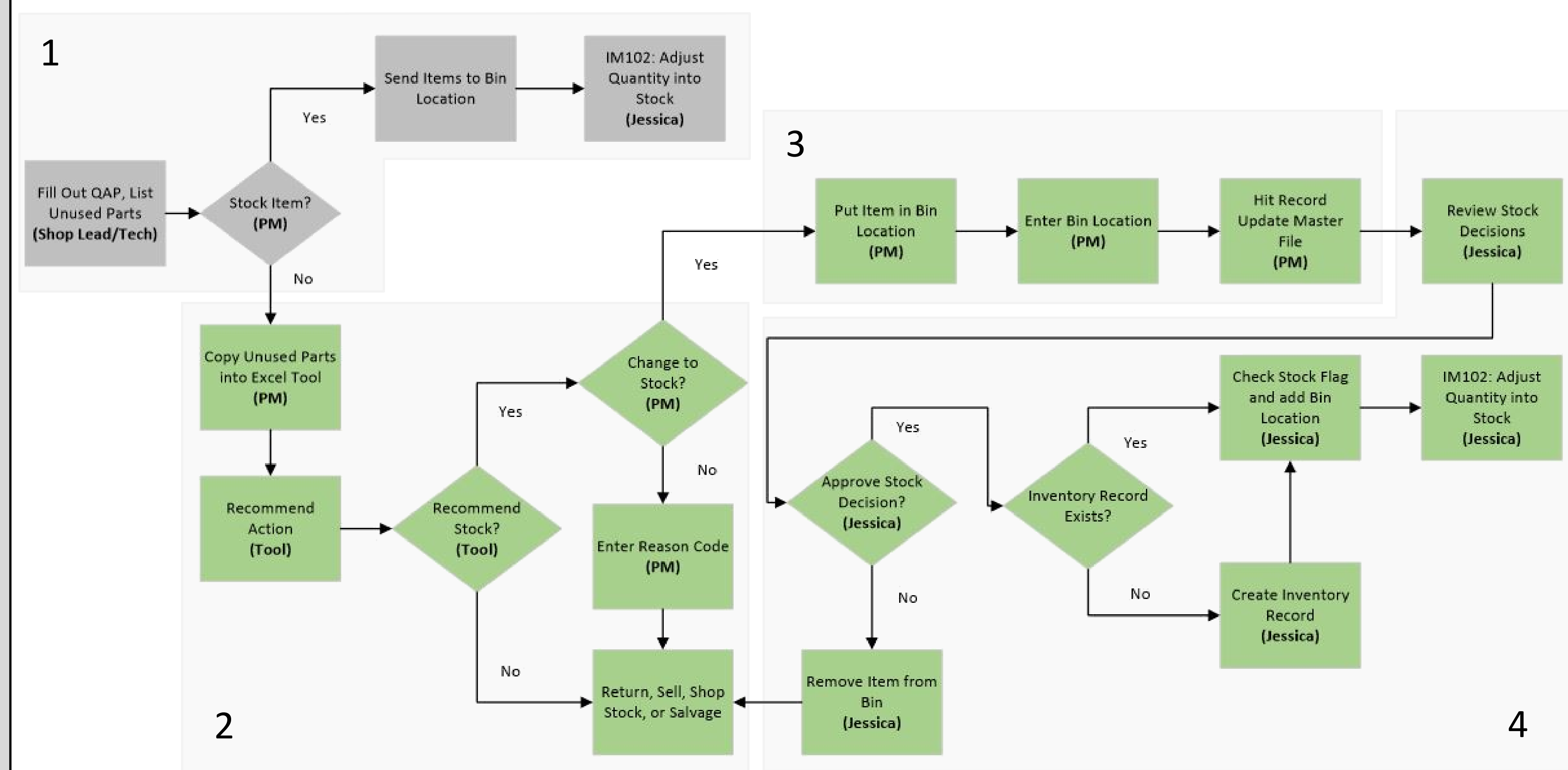
Department	18			
Action:	Stock	Return*	Sell	SS/Salvage^
Total Cost:	>0	>20	>100	<10
On Hand (days):	<180	>180	>180	>365
Next Use (days):	<180	>180	>180	>365

User Input Form

User input cells in blue									
Enter Initials:	JA	Refresh Query			Record				
Enter Department:	18								
Item Number	Quantity	Work Order Usage	Direct/Sale Usage	Cost Each	Usage Freq (Days)	Action Recommended	Decision?	Reason Code (if necessary)	Bin Location (if stock chosen)
798732704	5	11	14	\$9.90	29	Stock	Stock		18TDA07
900054201	10	0	0	\$5.09	100	Stock	Stock		18TDA03
900062599	12	4	90	\$77.72	8	Stock	Salvage	Damage	
900078860	17	153	0	\$6.03	5	Stock	Stock		18TDA09
900082003	3	0	30	\$2.44	24	Stock	Stock		18TDA02
798732704	5	11	14	\$9.90	29	Stock	Stock		
900054201	2	0	0	\$5.09	100	Stock	Stock		
900054205	6	0	0	\$6.79	1000	Shop Stock/Salvage	Salvage		
900062599	1	4	90	\$77.72	8	Stock	Stock		
900078860	3	153	0	\$6.03	5	Stock	Return	Eligible for Return	

- Item numbers and quantities are entered
- “Refresh” button is pressed:
 - Work order usage, Direct/Sales history Item information gathered
- Days on hand, next use, each and total costs calculated
- Action recommended based on frequency and cost (from parameters):
 - Stock, Return, Sell, Salvage, Shop Stock
- Decision chosen from list, if stock assign bin location
- “Record” button is pressed:
 - Two outputs created: Stock listing, Unused Parts Log

Process Change



Zone 1

- Current state process for stock items
- Items are sent to the bin location on record by Project Manager (PM)
- Quantity is updated in inventory record by Production Controller (PC)

Zone 2

- Filling out the excel tool (PM)
- Tool recommends an action based on **usage statistics** and **adjustable parameters**
- PM chooses an action from a drop down menu (Stock, Return, Scrap, Shop Stock)

Zone 3

- Physically place items in new bin location (PM)
- Record decisions/locations within excel tool
- Unused Parts Log and Stock Listing are created

Zone 4

- PM **decisions are reviewed** (PC)
- Where applicable, inventory record is created and quantity is adjusted into inventory record
- Birds eye view will allow management to quickly check that **items are visible** in inventory system

Unused Parts Log

Department	Initials	Item Number	Quantity	Work Order Usage	Direct/Sale Usage	Overall Usage	Cost Each	Days On Hand	Next Use (days)	Action Recommended	Decision?	Reason Code (if necessary)	Bin Location (if stock chosen)	Date Entered
18 JA		798732704	5	11	14	25	\$9.90	146	29	Stock	Return		18TDA04	2/5/19 19:23
18 JA		900054201	10	0	0	0	\$5.09	1000	100	Stock	Stock		18TDA03	2/5/19 19:23
18 JA		900062599	12	4	90	94	\$77.72	93	8	Stock	Sell	Not Eligible for Return		2/5/19 19:23
18 JA		900078860	17	153	0	153	\$6.03	81	5	Stock	Return			2/5/19 19:23
18 JA		900082003	3	0	30	30	\$2.44	73	24	Stock	Stock		18TDA07	2/5/19 19:23
18 JA		798732704	5	11	14	25	\$9.90	146	29	Stock	Stock		18TDA03	2/5/19 19:23
18 JA		900054201	10	0	0	0	\$5.09	1000	100	Stock	Stock		18TDA03	2/5/19 19:23
18 JA		900054205	1	0	0	0	\$6.79	1000	1000	Shop Stock/Salvage	Stock		18TDA09	2/5/19 19:23
18 JA		900062599	12	4	90	94	\$77.72	93	8	Stock	Stock		18TDA02	2/5/19 19:23
18 JA		900078860	17	153	0	153	\$6.03	81	5	Stock	Sell		18TDA02	2/5/19 19:23

- The Unused Parts Log is a historical record of every part/line entered into the above form
- This document will also contain relevant information such as vendor and project size
- The log can be used for **root cause analysis**

Inventory Dashboard

Bin Location	Size	Item Assigned	Quantity	Value	Date Assigned	Last Counted	Utilization:
18TDA01	4.25x4.25x4"						3%
18TDA02	4.25x4.25x4"						72
18TDA03	4.25x4.25x4"						\$82
18TDA04	4.25x4.25x4"						
18TDA05	4.25x4.25x4"						
18TDA06	4.25x4.25x4"	900186036	6	\$10.38	3/27/19	3/27/19	
18TDA07	4.25x4.25x4"						
18TDA08	4.25x4.25x4"						
18TDA09	4.25x4.25x4"						
18TDB01	4.25x4.25x4"						
18TDB02	4.25x4.25x4"						
18TDB03	4.25x4.25x4"						
18TDB04	4.25x4.25x4"						
18TDB05	4.25x4.25x4"						
18TDB06	4.25x4.25x4"	753030234	1	\$71.33	3/27/19	3/27/19	
18TDB07	4.25x4.25x4"						
18TDB08	4.25x4.25x4"						
18TDB09	4.25x4.25x4"						
18TDC01	4.25x4.25x4"						
18TDC02	4.25x4.25x4"						
18TDC03	4.25x4.25x4"						

18 TD A 06

Department 18
Location ID TD
Level / Row A
Position / Column 06

- Displays current inventory levels and provides a **birds-eye view** of bin locations
- Color coded empty or full
- Query driven
- Will **alert user** to items that have been idle longer than pre-specified limit

Department 18 Results

Inventory Reduction
- Items with projected on-hand time greater than two years scrapped

Time Study
- 30 samples, 5 trials per 6 subjects, 5 items per trial
- 150 total items tested

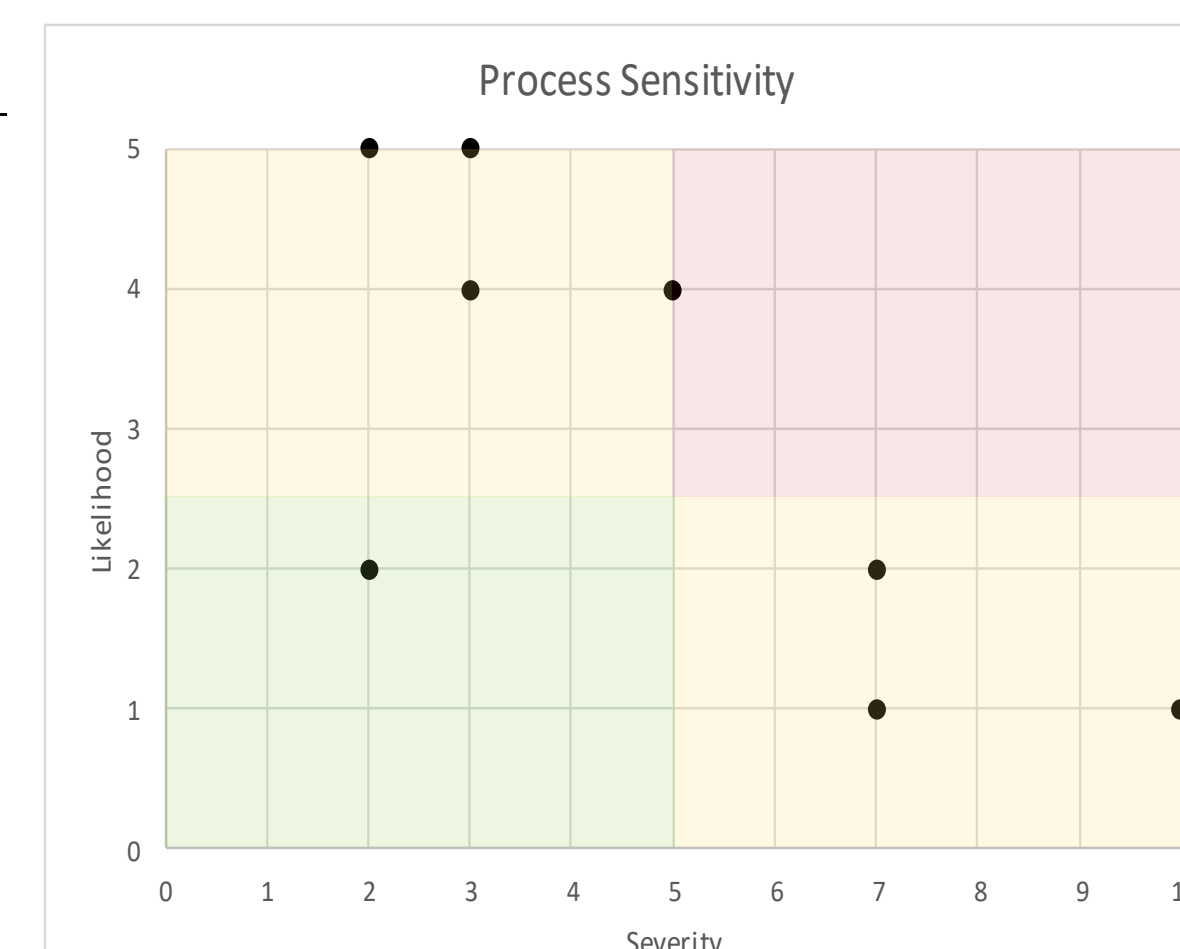
Original Process	Improved Process
Average — 48.6 seconds	Average — 10.9 seconds
Std. Dev — 15.6 seconds	Std. Dev — 2.5 seconds

Inventory On-hand
66.7% reduction in holding cost

Overall Change in Cycle Count Time
68.0% reduction in average picking time
84.2% reduction in standard deviation

Sensitivity Analysis

Failures	Severity	Likelihood
All bin locations full	10	Rare
Query won't refresh	7	Rare
VBA stops working	7	Uncommon
Query returns incorrect data	5	Occasional
Excel tool makes poor decisions	3	Occasional
Incorrect item/bin entered	3	Common
Location size too small	2	Uncommon
Incorrect cycle counts	2	Common



Implementation Plan & Scalability

- Transferrable Process
The company can use the process and tool provided to realize savings in other departments
- Can be implemented within company website, Apogee for added stability
- Department 22
Held Non-stock Inventory
\$46,600
Unique / Total Items
525 / 7833
Increase from Department 18
428%