



# AutomationAdvisor™ Assessment

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# Project Tracker

Onsite Assessment	Pain Ranking Meeting	Pain Ranking Returned	Final Review
August 24th			

Task	Owner	Priority	Due Date

# Automation Assessment – Executive Summary

Viabile Automation Projects:  
**4-6**

Potential Cost Range:  
**\$15k - \$350k**

Estimated Project Timeline:  
**1 – 18 Months**

Potential Payback:  
**0.5 - 7 Years**

Labor Impact:  
**0.25 – 9 FTE Redeployed**

Departments Impacted:  
**Rod Cutting  
Fabrication  
Welding  
Assembly  
Packaging**

Parallel Projects:  
**VSM  
Facility Layout  
Continuous Improvement  
Support Training**

# Client Areas Assessed

<b>Rod Cutting</b>	<b>Wire Mesh Cutting</b>	<b>Door Cell</b>	<b>Assembly Lines</b>
<b>Comstock</b>	<b>Powder Coating</b>	<b>Shipping</b>	<b>Warehouse</b>

## Ideal Automation Projects:

**Low Risk**  
**Solve Existing Pain**  
**Attractive ROI**

# Automation Assessment – Initial Thoughts

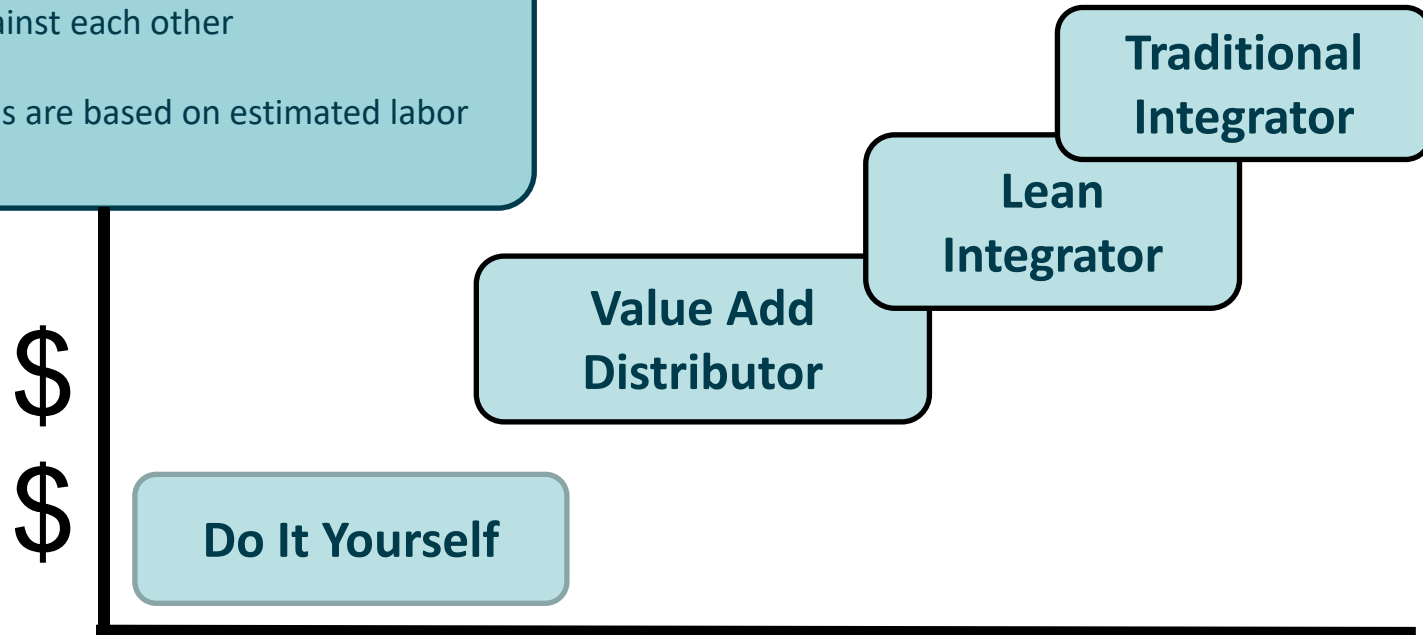
**Part Variety** – Client has mainly a High-Mix, Low-Volume production environment with some higher volume units and process steps. Automation solutions will need to be flexible, with new parts easily programmed. The part variety and smaller batches cause the ROI of any automation investment to be a step function as more parts are included.

**Walkaway Time** – Unless we can decouple an employee from a process for 15+ minutes, automation may not be worth the investment. Some of the automated solutions may allow for off-shift production, which will improve the potential ROI.

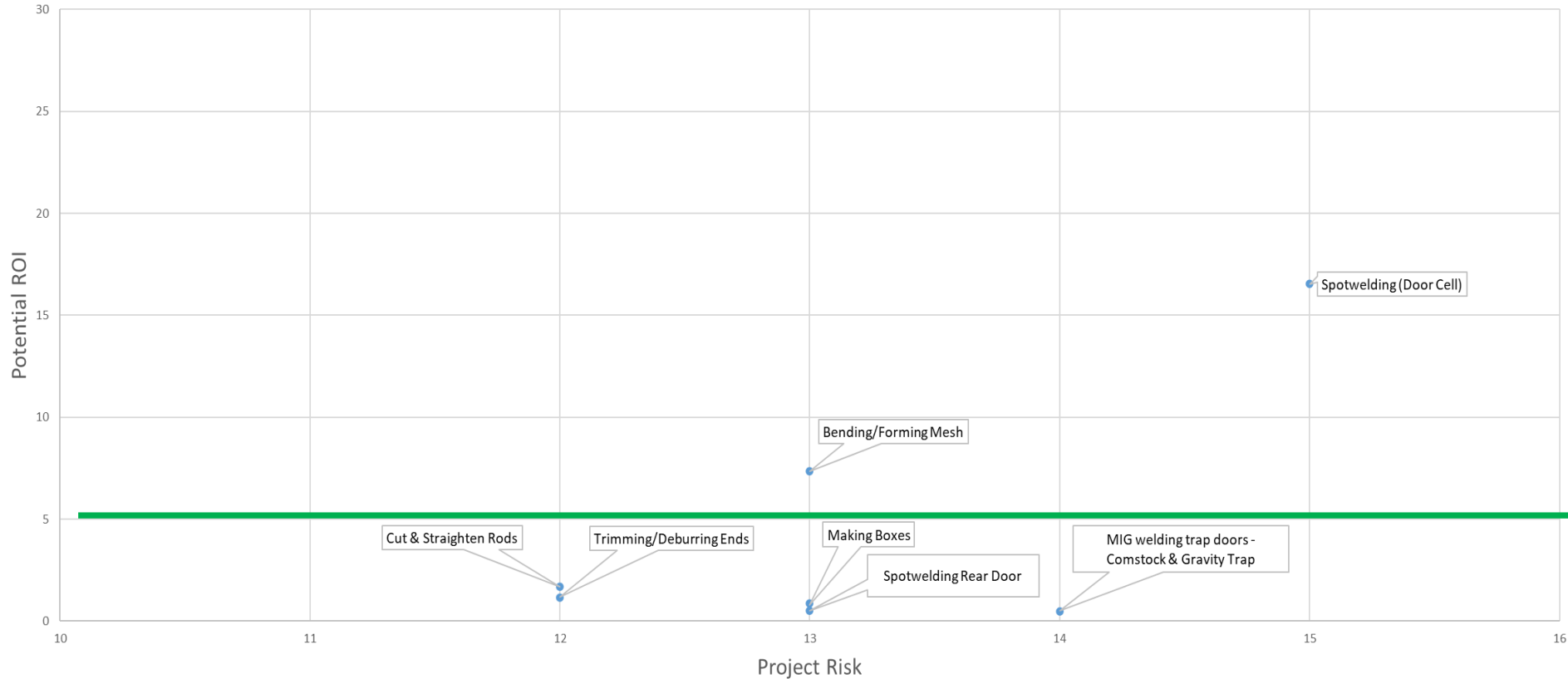
**Wire Challenges** – Products made from flexible materials – like wire mesh and wire forms - or with wide manufacturing tolerances – wire mesh and assembly – can provide added challenges to automation solutions and may require in house improvements to dial in.

# Automation Assessment Notes

1. Costs are approximate, and will vary depending on equipment options and OEM selection
2. The Priority Chart is intended to contrast project risk against each other
3. ROI calculations are based on estimated labor savings



# Automation Assessment – Project Priority Chart



Project Focus Zone

# Automation Assessment – Labor Impacts

- FTE's available to Redeploy
  - CNC Wire Bending Cell 4.5 FTE
  - Trimming Ends 0.75 FTE
  - Spotwelding (Door Cell) 0.5 FTE
  - Bending/Forming Mesh 0.75 FTE
  - Staple/Stitch Rear Channels 0.25 FTE
  - MIG welding Cell 1.5 FTE
  - Making Boxes 0.75 FTE



# Automation Assessment – Project Implementation

## Projects with Immediate Impact

- CNC Bending Cell
- On Demand Packaging machine
- MIG welding trap doors - Comstock & Gravity Trap

Automation can be inserted into these processes with little to no change in Client internal processes

### MOC Project Selection Reasoning:

- CNC machine bender offers significant savings in materials by bringing purchased parts in house. The ability to control production, quality, product design internally offers added benefits. Savings is not specific to rod cutting alone, but is spread throughout multiple process steps throughout production.
- On Demand Packaging machine offers ability to make boxes on demand for exact SKU rather than to have to stock large runs of cardboard or have to make custom boxes from sheet yourselves. Lease options make low cost to pilot.
- MIG welding cells are available from multiple vendors who offer low risk lease options with full support. Starting with a high volume design – gravity door - could be a phase 1 starting point before more variations – Comstock - are attempted.

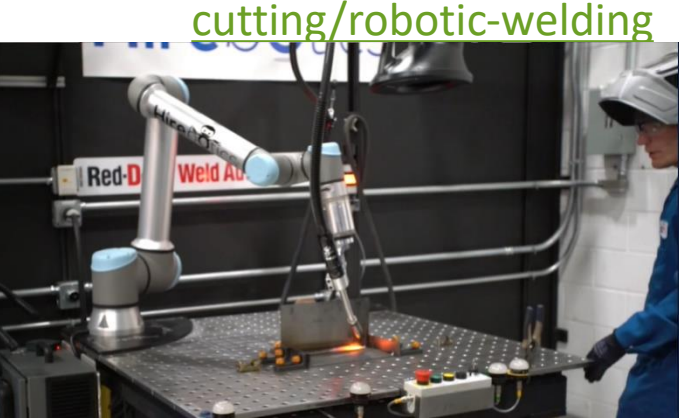
# Automation Assessment – Project Implementation

## Projects with Immediate Impact

Automation can be inserted into these processes with little to no change in Client internal processes

MOC Project Selection Reasoning:

- MIG welding cells are available from multiple vendors who offer low risk lease options with full support. Starting with a high volume design – gravity door - could be a phase 1 starting point before more variations – Comstock - are attempted.
- Lease (Universal):
  - HireBotics <https://www.hirebotics.com/>
  - Red D Arc (Air Gas) <https://www.red-d-arc.com/robotic-welding.aspx>
- Buy:
  - Mississippi Weld (industrial)
  - <https://www.mwsco.com/services/automation-robotics/welding-and-cutting/robotic-welding>



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# Automation Assessment – Project Implementation

## Projects with Immediate Impact

Automation can be inserted into these processes with little to no change in Client internal processes

MOC Project Selection Reasoning:

- Trimming/deburring edges and ends is a tedious but necessary task. Standard machines are made that debur wire panels. Need investigation to see how impacts processes. (detailed quote available)
- TimeSaver brand is the standard. (Possible. Requires more research)
  - <https://timesaversinc.com/products?filter=edge-rounding#>
  - <https://timesaversinc.com/products/compact-9-series>
  - <https://youtu.be/ZidIWZuSrTo>



# Automation Assessment – Project Implementation

## Projects with Future Impact

- Spotwelding (Door Cell) Machine
- Rear Door Channels (Stitch vs Spotweld)
- Bending/Forming Mesh Cell
- Trimming Ends Machine

These projects require changes to Client processes or work flow, or investment in existing equipment or need further study

### MOC Project Selection Reasoning:

- Spotwelding mesh automation cell may accommodate door cell and offer new methods for other components. Requires more investigation to improve ROI.
- Door channels could be Aluminum extrusions that are stitched into place. May be other uses or variations that machines makes possible.
- Bending/Forming Mesh cell could be setup to make boxes from mesh precut. Brake Press cobot integration would be required to run off shift. Brake press allows ability to make and form your own sheet metal parts, possibly J door channels.
- Trimming edges and ends is a tedious, sometimes dangerous, but a Critical To Quality task. Standard machines are made that debur sheet metal and parts. Could debur mesh panels and parts.

# Automation Assessment – Project Implementation

## Projects with Future Impact

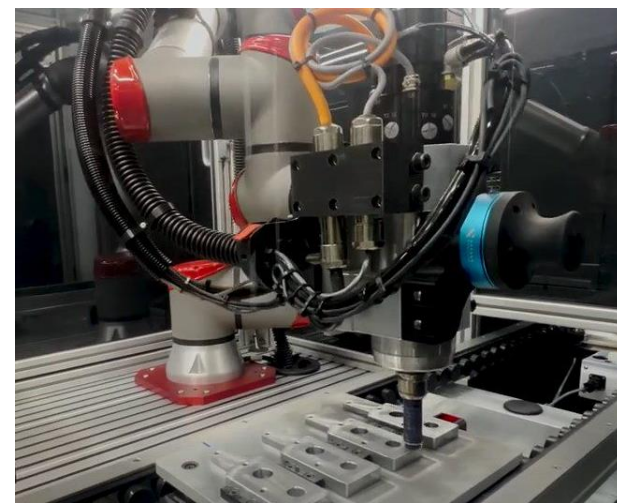
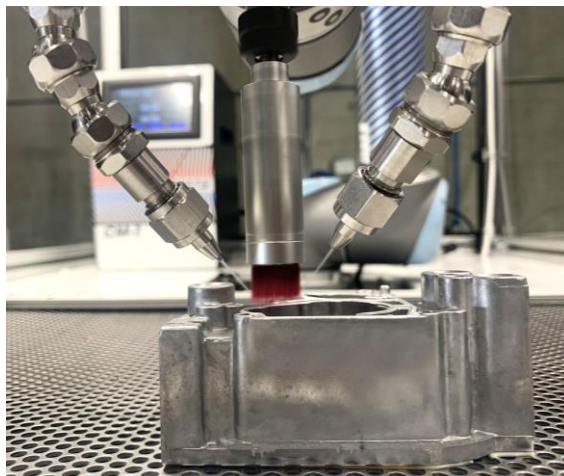
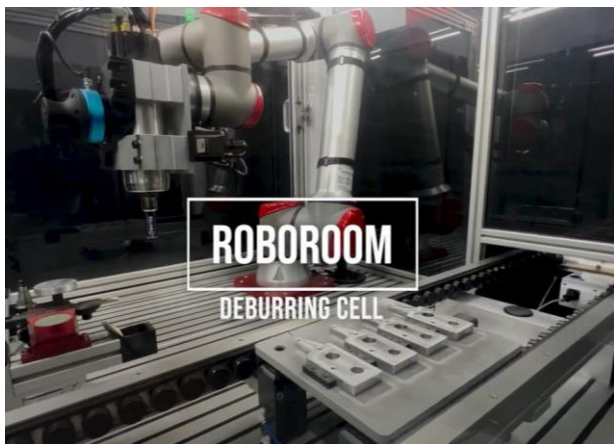
Automation can be inserted into these processes with little to no change in Client internal processes

MOC Project Selection Reasoning: next generation no-code robotics.

Weld seam removal: <https://www.youtube.com/watch?v=Tvw0kq8ZIMA>

Sanding and milling: [https://www.youtube.com/watch?v=\\_A-FyNvPM2Q](https://www.youtube.com/watch?v=_A-FyNvPM2Q)

[www.nordbo-robotics.com](http://www.nordbo-robotics.com)



<https://reliabotics.com/products/surface-deburring-finishing/>

# Automation Assessment – Project Implementation

## Projects with Future Impact

These projects require changes to Client processes or workflow, or investment in existing equipment or need further study

### MOC Project Selection Reasoning: automate material movement

- <https://www.konecranes.com/en-us/equipment/overhead-cranes/safe-features-for-overhead-cranes>



<https://rhinotoolhouse.com/products/material-handling/crane-controls/>

<https://www.konecranes.com/en-us/industries/metals-production/the-strength-of-experience/remote-operating-station-for-metals-production-facilities>

# Automation Assessment – Project Implementation

## Projects with Office/Shop Impact

Automation can be inserted into these processes with little to no change in Client internal processes



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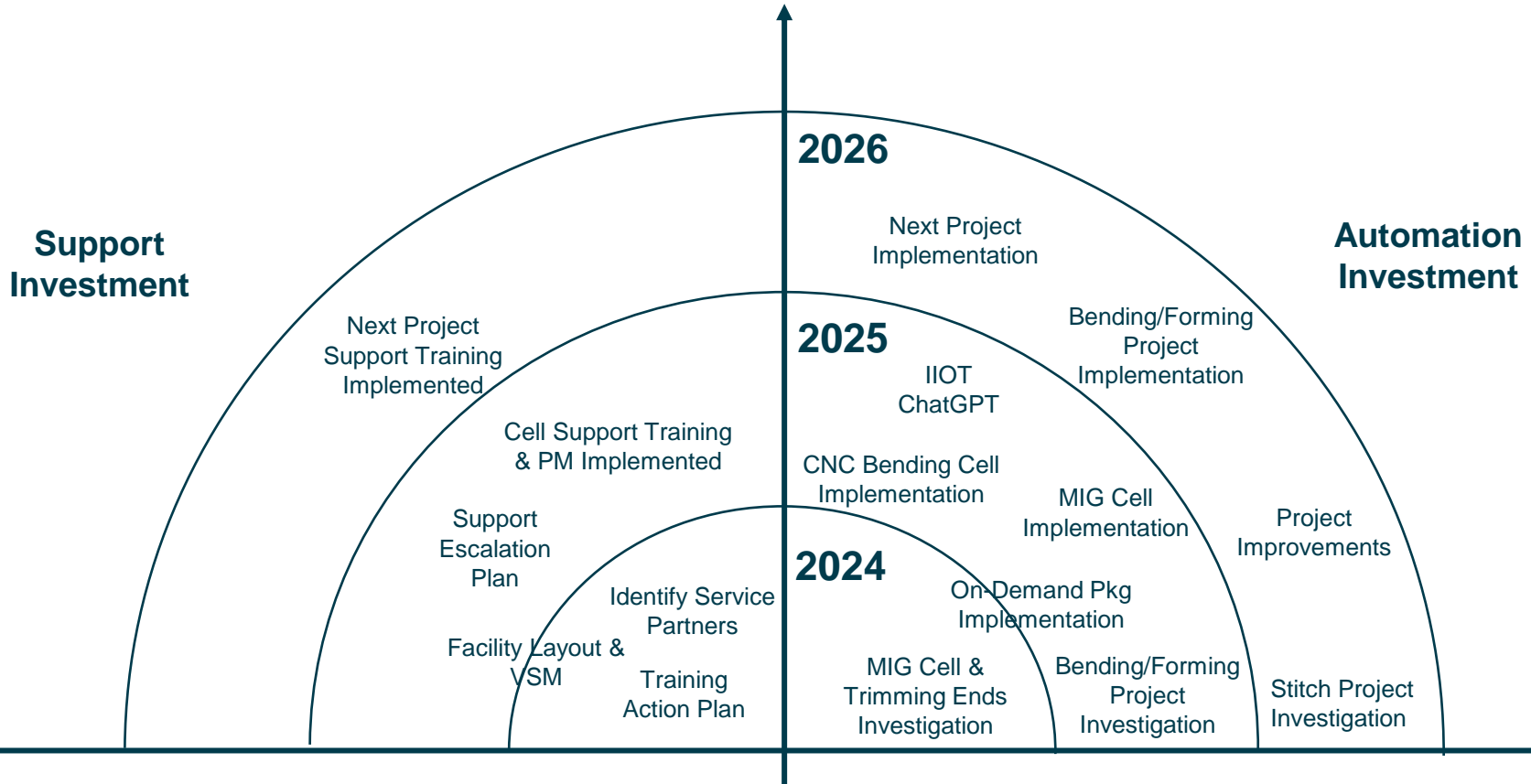
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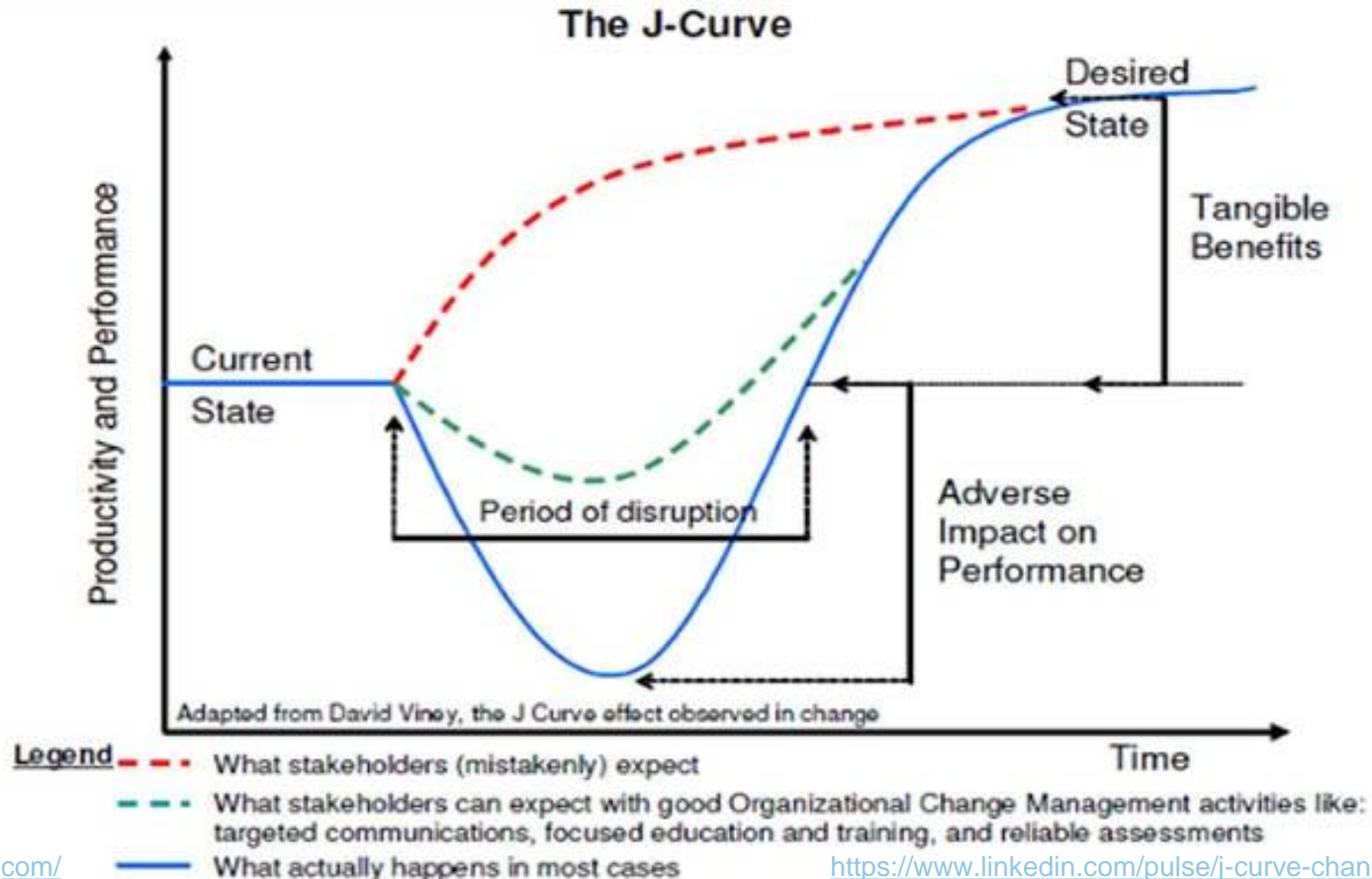
a NIST | Network  
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# Your Automation Strategy (Draft)





# MANAGE EXPECTATIONS! It's a journey...



<https://www.changefirst.com/>

<https://www.linkedin.com/pulse/j-curve-change-david-viney/>

# Automation Project Planning:

## - Project Phases & Potential Participants

Project Task	Internal Resources	Consultants	OEM / Integrator	Service Provider
Assess Manufacturing Processes	X	X	X	
Rank Process Risk & Establish ROI	X	X		
Develop RFQ & Performance Spec	X	X		
Engineering Development - PoC	X		X	
Assess Bids	X	X		
Modify Performance Spec	X	X	X	
Develop Project Management Structure	X	X		
Generate & Modify Project Gantt Chart	X		X	
Design Reviews	X	X	X	
Design Acceptance	X		X	
Assembly & Debug			X	
FAT	X		X	X
Rig, Ship, Recommission			X	X
SAT	X		X	X
Training, Troubleshooting, & PM	X		X	X
Equipment Upgrades & Modifications	X	X	X	X

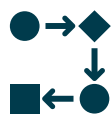
# Automation Project Planning:

- Best practices for successful implementation

## Pre-Project Efforts



Understand Business Strategy Fit



Evaluate Processes & Potential Best Practice Improvements



Research Potential Technologies

## Project Planning



Define Project Scope



Engage & Evaluate Partners



Engineering Development Testing



# Automation Project Planning:

- Best practices for successful implementation

## Project Execution

Clearly Defined Roles & Project Team

Project Management Structure

Project Gantt Chart

Product Samples – Production Representative

Weekly Check-Ins

Pre-Defined Acceptance Criteria – FAT/SAT

Progress Visits for Evaluation

Installation & Training Plan

## Extended Support

Department Training:

- Maintenance, Operator, Operations

Software, Programming, CAD

Machine Down Process Definition

Technical Support:

- Third Party or In-House

Future Upgrades & Modifications

Critical Spare Parts

Preventative Maintenance

# Long Term Support:

- Equipment technical support & digital trends

## Technical Support Avenues

Upskill, Hire, Outsource

Service Contract with OEM

- Committed Response Time
- Cross-Trained Internal Team

Third-Party Service Contract

- Geographic Advantage
- Included in Training/FAT/SAT Phases

## Data Access

Software Licenses – Site, Corporate

Virtual Machines for Software Revisions

Remote Monitoring Capabilities

IT Department Integration

Data Storage – Snapshot vs. History

Long Term Analysis

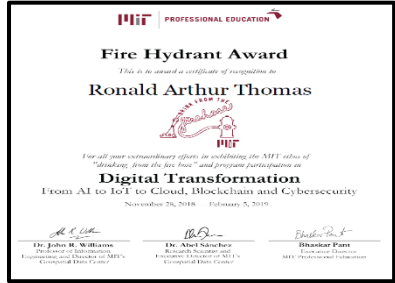
- Production Data to Align Machines
- PM Data to Reduce Downtime

# WEDC TIP Program & AutomationAdvisor

- WEDC Grant (\$1M)
  - Support I4.0 automation
  - Free up workers (FTEs)
- Steps
  - SMM complete AutomationAdvisor
  - Qualifying project on Roadmap
  - 20% match; Max \$35k for purchase
  - 10% match; Max \$10k for lease
- AutomationAdvisor – Assessment
  - \$3000 Contract
  - Onsite Meeting and Tour
  - Virtual Pain Rankings
  - Virtual Presentation of Roadmap
  - Virtual Follow-Up
  - Next Steps
- AutomationAdvisor – Implementation
  - Qualifying Project (Optional)

# Ron's Background

- 25+ years in Industry
- Transformational Problem Solver
- BSME, MS Engrg, MS PM, Ed.D
- Researcher, Developer, and Project Manager
  - Disruptive Innovator
  - NPD & Entrepreneurial Systems
  - Digital Manufacturing
  - \$10M DOD R&D project
  - MIT Digital Transformation
  - Industry 4.0
- Family, Cats/Dogs, Outdoors





# Thank you!

- UW-Stout Manufacturing Outreach Center
- Phone 715-232-2397 or toll free 866-880-2262
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