

PURPOSE DRIVEN LEAN

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VP – Global Operational Excellence
Astec Industries, Inc.



Change Agent



Principles of Change

People care more about the *why*
than they do about the *what*.

They need to
think you care...
before they will
care what you
think.

Before you can win *their minds...*
You have to win their hearts.

Our Story

SAFE HARBOR

This presentation and discussion may contain forward-looking statements regarding the future performance of the Company, including representations about the Company's future financial performance, market conditions, the long-term growth prospects of the Company and its markets, opportunities for market share gains and acquisitions and performance of companies in Astec's markets. These forward-looking statements reflect management's beliefs and assumptions. They are not guarantees of performance and are therefore subject to risks and uncertainties. The information in this presentation is not an update or reaffirmation of previously disclosed information. Future events and actual results could differ materially from those expressed in or implied by the forward-looking statements. Factors that could cause future events or actual results to differ materially from the Company's expectations include uncertainty in the economy, rising oil and liquid asphalt prices, rising interest rates, changes in highway funding availability, the timing of large contracts, production capacity, changes in size and mix of backlog, seasonality and cyclicity in operating results, seasonality of sales volumes, demand for the Company's products, competitive activity and those other factors listed from time to time in the Company's reports filed with the SEC.



Astec Industries has 18 Subsidiary Companies

INFRASTRUCTURE GROUP



AGGREGATE & MINING GROUP



ENERGY GROUP



An OpEx Leader in each company – reporting to the Company President

A few of our products...





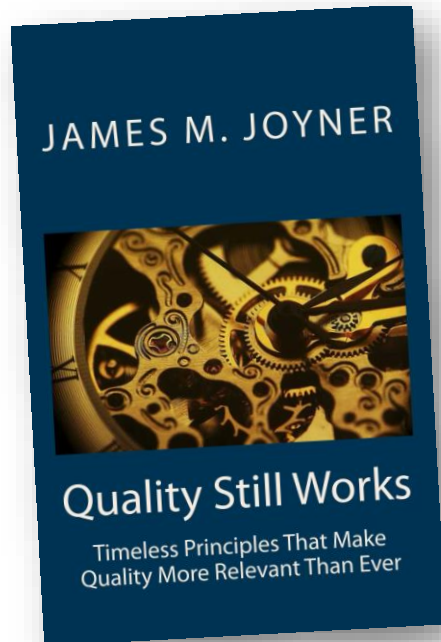
Our Core Values

- Continuous devotion to meeting the needs of our customers.
- Honesty and integrity in all aspects of business.
- Respect for all individuals.
- Preserving an entrepreneurial spirit and innovation.
- Safety, quality and productivity as means to ensure success.

These are the foundation for our Operational Excellence Initiative.

Purpose Driven

From *Quality Still Works*



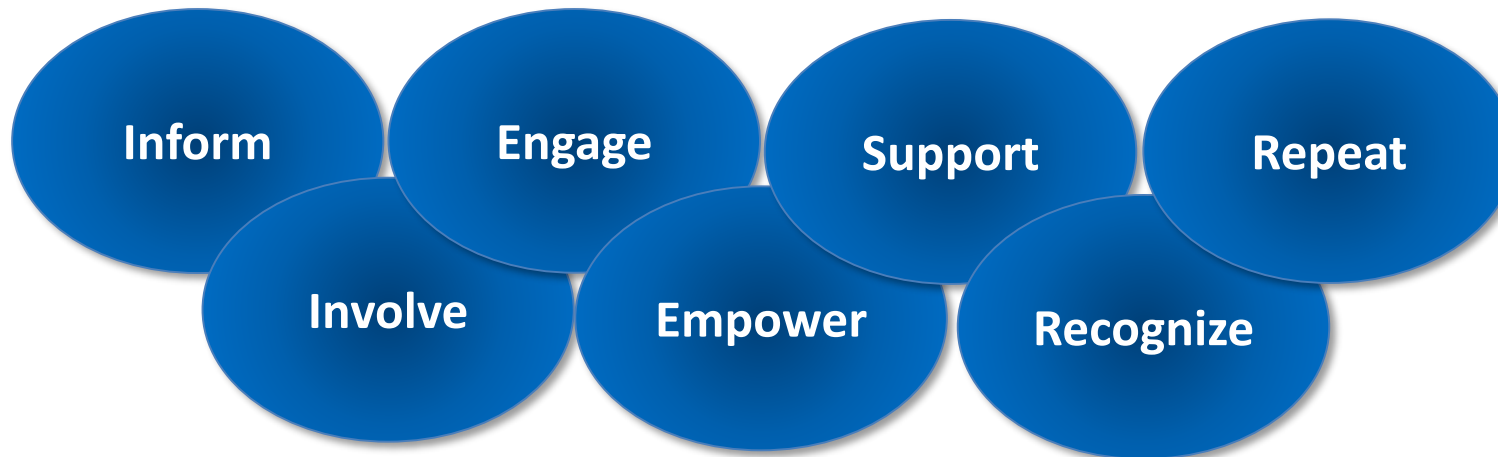
Take care of your **customers**, take care of your **people**, and *they together* will take care of all else. Pg. 94

Quality has more to do with **people** than things. Pg. 6

Besides **money** as the common medium of exchange, the other common element shared by every organization in the world is **people**. Pg. 98

Purpose Driven


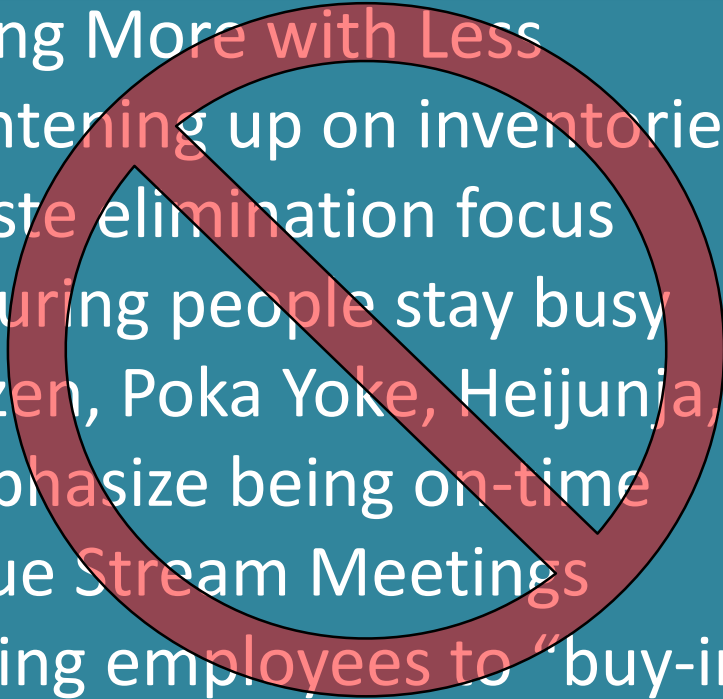
Everyone wants to feel worthy,
valued and appreciated.



$$I^2 + E^2 + SR^2$$

Get Ready

What should Lean be About?

- 
- 
- Doing More with Less
 - Tightening up on inventories
 - Waste elimination focus
 - Ensuring people stay busy
 - Kaizen, Poka Yoke, Heijunka, etc.
 - Emphasize being on-time
 - Value Stream Meetings
 - Asking employees to “buy-in”

“So why are we doing this?”



Purpose Driven

Overarching Objectives

To serve our customers with unmatched agility and efficiency.

- Decrease lead times: responsiveness
- Closer relationships
- Unparalleled quality
- Provide Value
- Win more business

To be better stewards of the resources that we are given to manage.

- Grow & Develop our People
- Supplier & Inventory Management
- Value Creators
- Utilization & Efficiency

Targets

OPERATIONAL EXCELLENCE

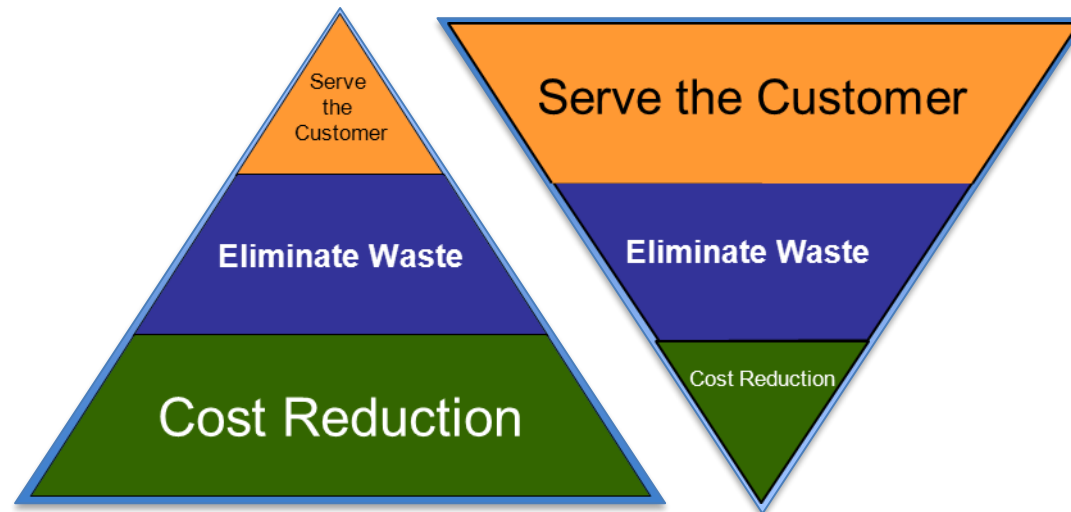
- Customer Impact
- Responsiveness & Agility
- Growth – Personal & Business
- Engagement – S/C/E
- Quality
- Productivity
- Efficiency
- Safety
- Simplicity
- Stewardship of the resources we are asked to manage*

**Stewardship* is a theory that people, left on their own, will act in good faith on behalf of the owners.

FOCUS ON THE

CUSTOMER

- Every activity in our Lean initiative needs to be directed towards creating value for the customer.
- If the customer does not feel the benefit, it is **probably not the right thing to do**, or the right time to do it.



Engage

What we teach our people.

LEARN HOW TO EFFECTIVELY

MEASURE

Don't bother measuring:

- How many employees get trained
- Number of kaizen events
- Kaizen dollars saved
- Value Stream Maps created
- Process Improvement projects completed

Measure things that your customers, employees and owners care about.

MEASURE WHAT MATTERS.

Each
Unit

Each Process Step

Measurement at
the Source – **in
the Workcell** –
updated and
reviewed daily.

4/19	Sand	Wash	Tape	Paint	Black	Total	Goals	Untape	Decal	Final Assy	Final Ch Out	Rework	Total	Goals		
Rp-190e 4217	Goal: HRS: 15 S-1:45 E-4:15 E-4:30 K3 T=14	Goal: HRS: 2 S-9:30 E-10:30 K1 T=1	Goal: HRS: 6 S-10:30 E-11:30 K5 T=15	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	34.4	40	← 14%	Goal: HRS: 6 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11		17		
SX-80e 4003	Goal: HRS: 15 S-1:15 E-1:15 E-1:15 K3 T=14	Goal: HRS: 2 S-9:30 E-10:30 K1 T=1	Goal: HRS: 6 S-10:30 E-11:30 K5 T=15	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	42.7			Goal: HRS: 6 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11				
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Rp-195e 4127	Goal: HRS: 15 S-7:00 E-1:00 K3 T=14	Goal: HRS: 2 S-11:00 E-12:00 K1 T=1	Goal: HRS: 12 S-12:00 E-1:30 K5 T=15	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	32.3	40	← 19%	Goal: HRS: 6 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11		17		
RX-600e 4131	Goal: HRS: 30 S-7:00 E-1:00 K3 T=14	Goal: HRS: 2 S-11:00 E-12:00 K1 T=1	Goal: HRS: 12 S-12:00 E-1:30 K5 T=15	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	Goal: HRS: 10 S-1:30 E-1:30 K2 T=11	50.5	65	← 22%	Goal: HRS: 6 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11	Goal: HRS: 4 S-1:30 E-1:30 K2 T=11		26		
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Transform

Change

Change is unavoidable; it is constant and **inevitable**. Typically short-term and tactical.

Transformation is a **conscious choice**. It is deliberate, long-term and strategic.

Transform

You are always one decision away from a totally different life.

Anonymous

Value Stream Transformation Plan									
Value Stream Mapping					Scheduling Review Dates				
Executive Sponsor: [Name]					Start Date: [Date]				
Value Stream Champion: [Name]					End Date: [Date]				
Value Stream Mapping Facilitator: [Name]					Date Created: [Date]				
Item	Measure	Target	Responsible	Owner	Start Date	End Date	Current Status	Next Review	Notes
1	Reduce cycle time	100%	John Doe	John Doe	1/1/20	1/31/20	100%	1/31/20	Completed
2	Reduce inventory	75%	Jane Smith	Jane Smith	2/1/20	2/28/20	75%	2/28/20	In Progress
3	Reduce scrap	50%	Mike Johnson	Mike Johnson	3/1/20	3/31/20	50%	3/31/20	In Progress
4	Reduce cost	50%	Emily White	Emily White	4/1/20	4/30/20	50%	4/30/20	In Progress
5	Reduce lead time	50%	David Brown	David Brown	5/1/20	5/31/20	50%	5/31/20	In Progress
6	Reduce waste	25%	Alice Green	Alice Green	6/1/20	6/30/20	25%	6/30/20	In Progress
7	Reduce errors	100%	Bob Black	Bob Black	7/1/20	7/31/20	100%	7/31/20	Completed
8	Reduce downtime	25%	Charlie Red	Charlie Red	8/1/20	8/31/20	25%	8/31/20	In Progress
9	Reduce quality	0%	Diana Blue	Diana Blue	9/1/20	9/30/20	0%	9/30/20	In Progress
10	Reduce risk	100%	Frank Purple	Frank Purple	10/1/20	10/31/20	100%	10/31/20	Completed



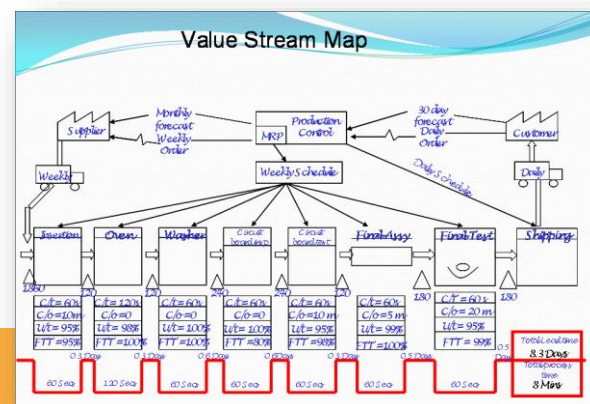
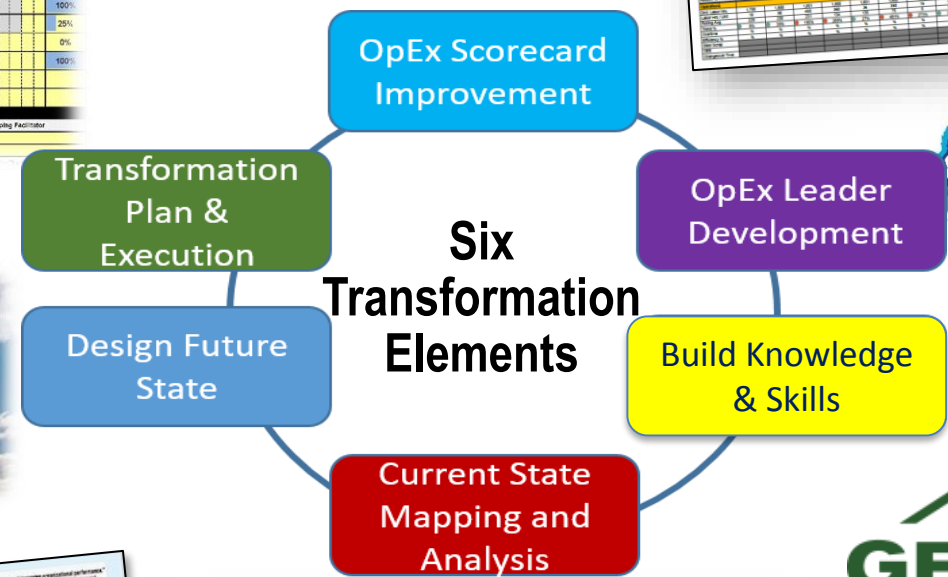
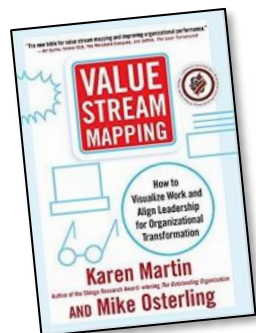
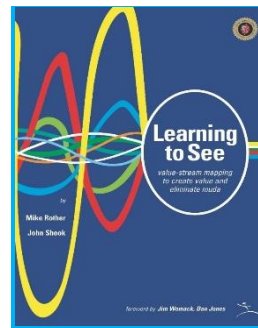
Company OpEx Scorecard									
Quarter 1 Year 2019									
Category	Target	Actual	Variance	Weight	Score	Notes	Owner	Start Date	End Date
Production	100%	95%	-5%	20%	19	Minor delays	John Doe	1/1/20	1/31/20
Quality	99%	98%	-1%	15%	14	Minor defects	Jane Smith	2/1/20	2/28/20
Cost	90%	85%	-5%	25%	21	Material waste	Mike Johnson	3/1/20	3/31/20
Delivery	95%	90%	-5%	15%	14	Logistics issues	Emily White	4/1/20	4/30/20
Customer	90%	85%	-5%	15%	14	Complaints	David Brown	5/1/20	5/31/20



AME Association for Manufacturing Excellence.
Share • Learn • Grow.

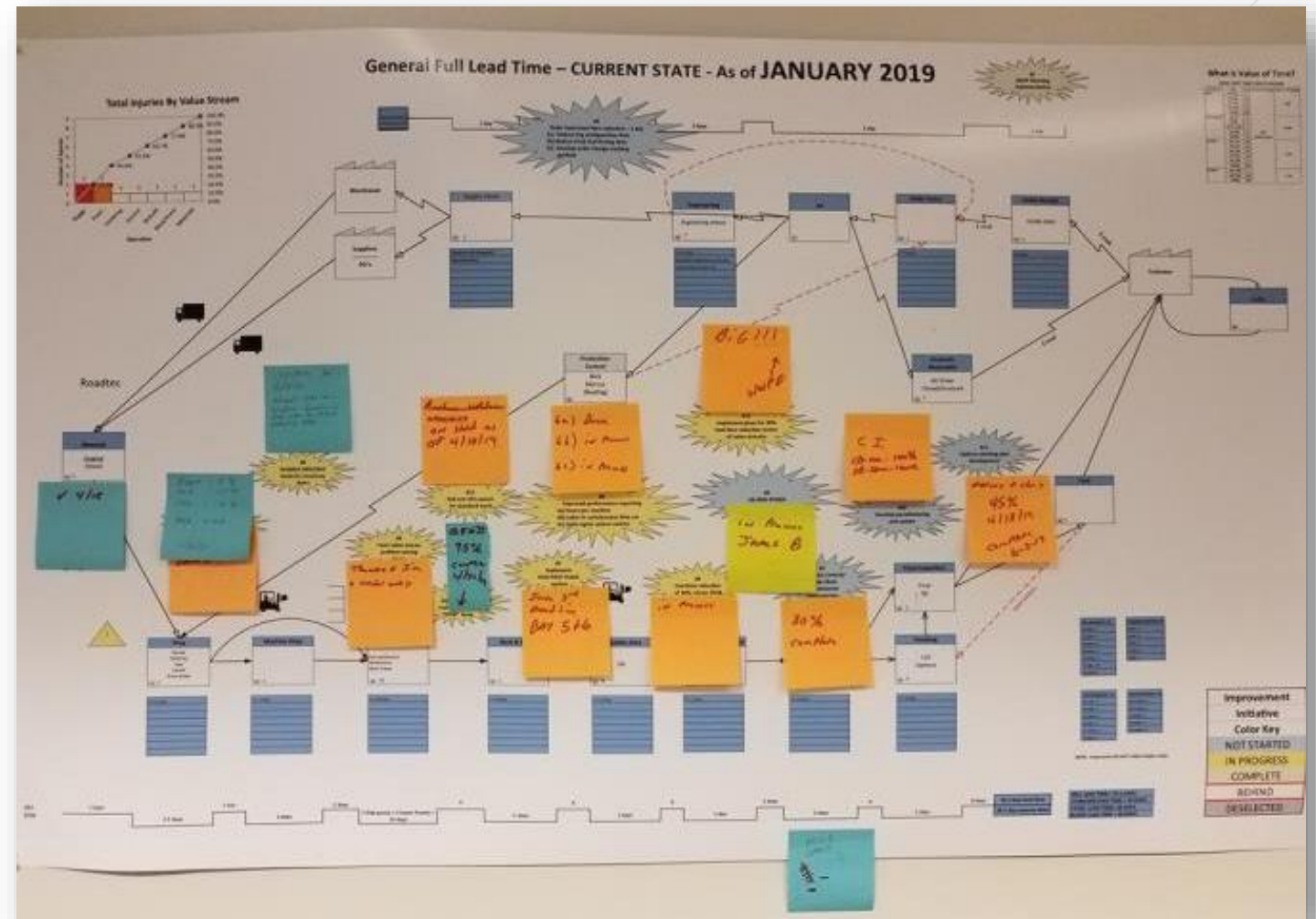
GEMBA ACADEMY

ASTEC INDUSTRIES, INC.



VSM's Created on butcher paper with Post-It® Notes

Discovered about
70% NVA Time
through the VS



PAVER TRACK ASSEMBLY KAIZEN EVENT



1. Installed a zero gravity lift assist device. **Result: Reduced risk of injury.**
2. Cleaned work area, applied 6S principles, painted and clearly marked work zones. **Result: Improved layout and eliminated 14 steps per part.**
3. Installed and implemented parts organization system. **Result: Reduced operator motion and maximized time management.**
4. Implemented a rolling press ram frame to support the lift process. **Result: Reduced ergonomic risk for operator.**
5. Installed a track presentation table, which enabled vertical installation, reducing the previous awkward process. **Result: Improved cycle time and more efficient organization.**

48%

reduction in cycle
time (from 21 to 11
hours)

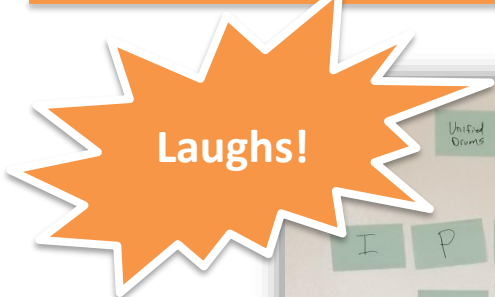
- Safer work environment
- Reduced costs
- Improved quality
- Improved employee engagement

Improved Safety R3
score by **95%**



Recognize Successes!

Kaizen Event



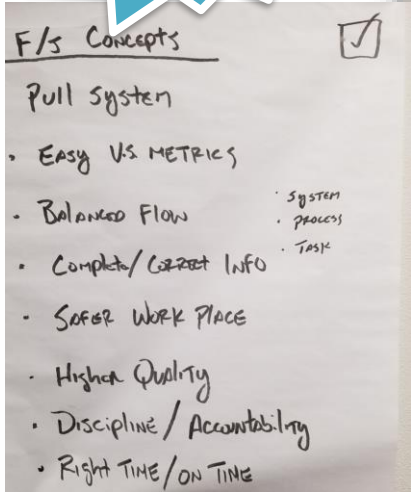
Laughs!



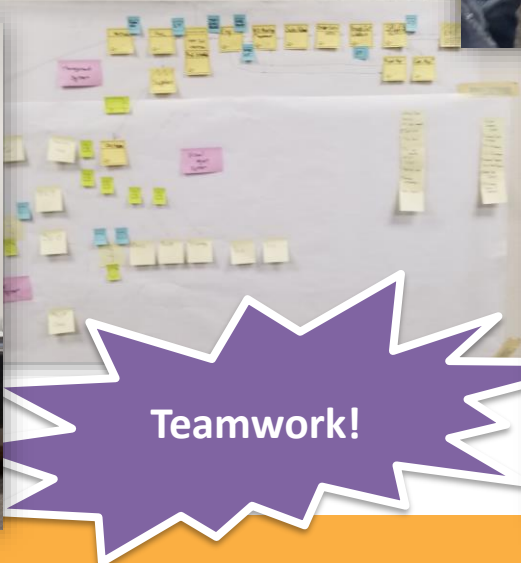
Engagement!



Growth!



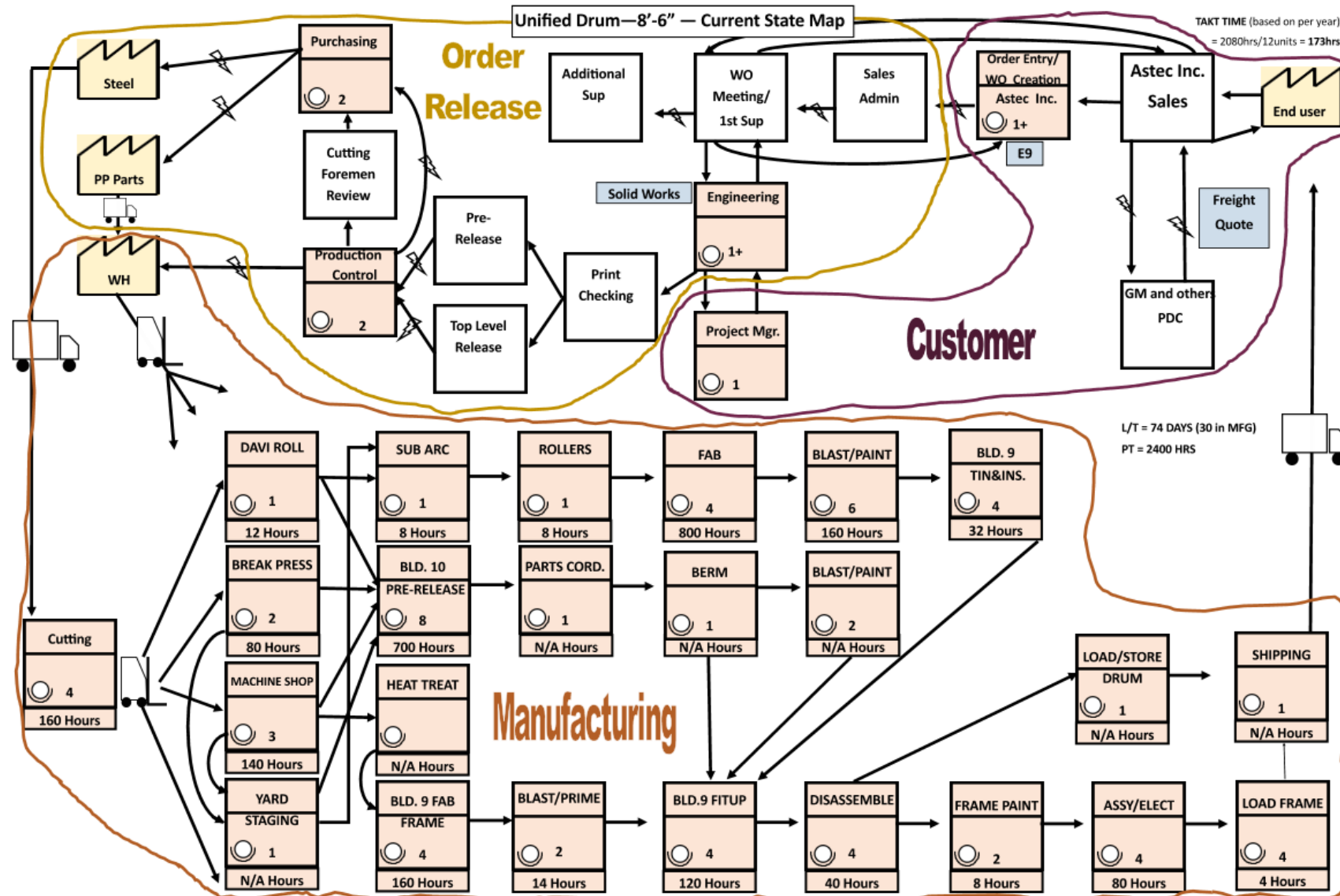
Learning!



Teamwork!

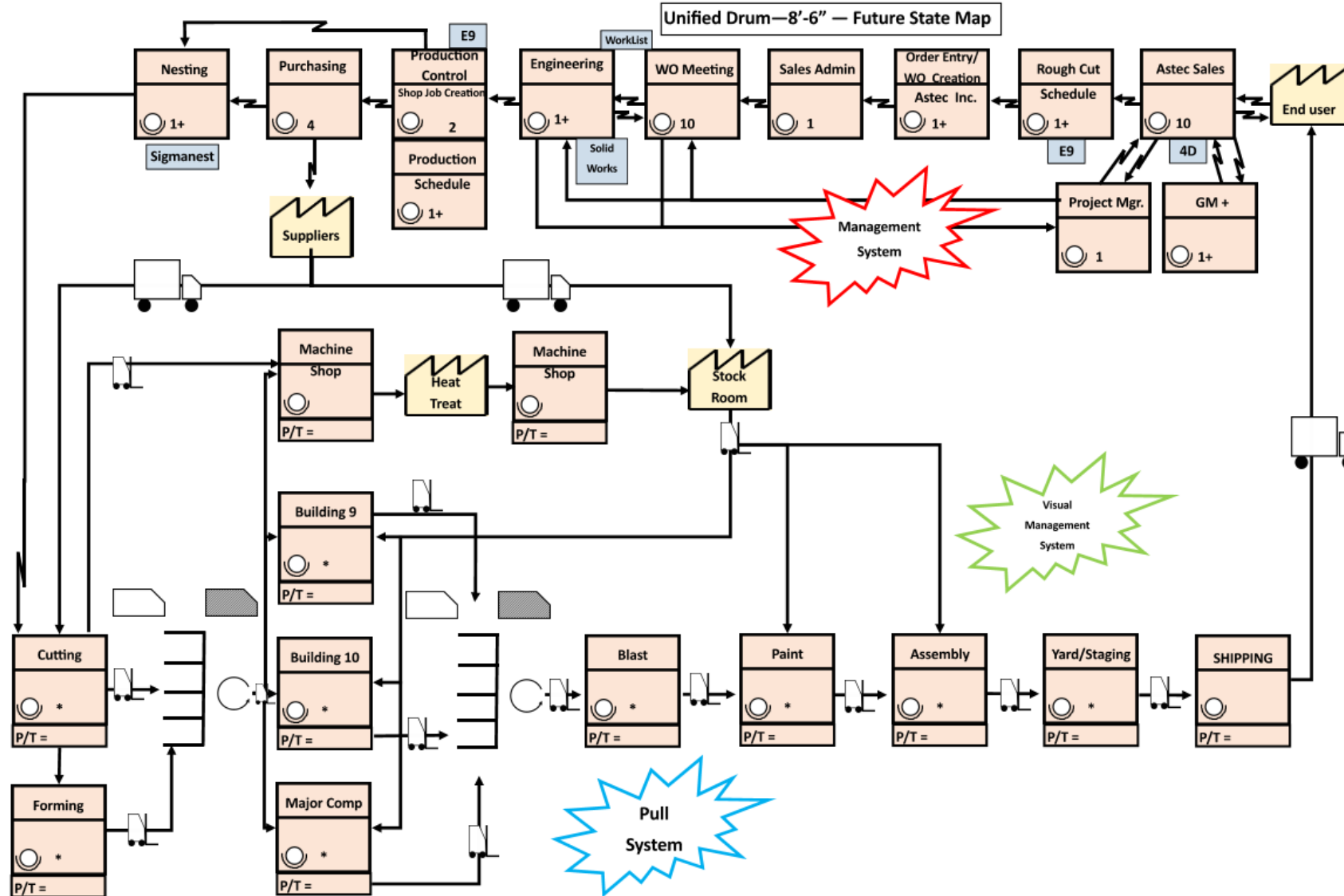
Value Stream Metrics		
MEASURE	C/S	F/S
SALES	4.759M	
EFFICIENCY (Direct Hrs)	2408	1622
LEAD TIME	74 days	50
Quality (Rework Job Releases)	9	3
MARGIN (unallocated)	38.36%	49.5%
PROCESS TIME	2400 hrs	1622

Current State



3

Future State



Value Stream Transformation Plan

Value Stream				Unified Drum	Plan Review Dates														
Executive Sponsor				Kim Graf															
Value Stream Champion				William Wallerstedt															
Value Stream Mapping Facilitator				Rod Vogelsberg															
Date Created				8/29/2019															
Priority	Fut State Sys	Cur State VS Loop	Problem or Proposed Countermeasure	Notes	Exec. Method *	Owner	Planned Timeline for Execution (months)												Status
							1	2	3	4	5	6	7	8	9	10	11	12	
1	Mgt	Customer	Project Manager meet with Sales early	Captures "Feedback approval-communicate faster, Improve/correct/clarify Work Order information"	JDI	Kim	x												0%
1	Mgt	Customer	Eliminate 2nd supplement +		Proj	Lee		x											0%
4		Customer	Feedback approval-communicate faster	Captured above	JDI														0%
4		Customer	Improve Work Order information	Captured above	JDI														0%
1	Mgt	Customer	Lower standard cost/increase option cost		Proj	Kim													0%
1	Mgt	Customer	Eliminate late Work Order adders/changes		Proj	Lee													0%
1	Mgt	Customer	Educate Sales on Dillman equipment		JDI	Rory													0%
2		Customer	Correct Work Order information	Captured above	Proj														0%
4		Cust. & Order Rel	Clarify Work Order terminology	Captured above	JDI														0%
1	Visual	All Loops	Implement metrics within PDC	Captures "Improve accuracy within Engineering" & "Define and deploy VS metrics"	Proj	Rod	x												0%
4		Cust. & Order Rel	Improve accuracy within Engineering	Captured above	Proj														0%
4	Mgt	Cust. & Order Rel	Investigate elimination of Stainless Steel, go to paint & tin		Proj	Mike	x												0%
1	Mgt	Order Rel	Improve print checking process		JDI	Marc		x											0%
1	Mgt	Order Rel	Add etching		JDI	Aaron	x												0%
4		Order Rel	Re-incorporate universal discharge	Decided to eliminate	JDI														0%
1	Visual	Order Rel	ECO completion		Proj	Aaron	x												0%
1	Visual & Mgt	Order Rel	Use Standard Worklist		JDI	Marc	x												0%

6 Month Time Frame

D
NCE



VALUE STREAM METRICS

UD - Value Stream

MEASURE	CURRENT STATE	FUTURE STATE	
DIRECT HOURS	2408	1622	-33%
LEAD TIME	74 DAYS	50 DAYS	-32%
QUALITY (REWORK JOB RELEASES)	9	3	-67%
MARGIN %	38.36%	49.5%	29%

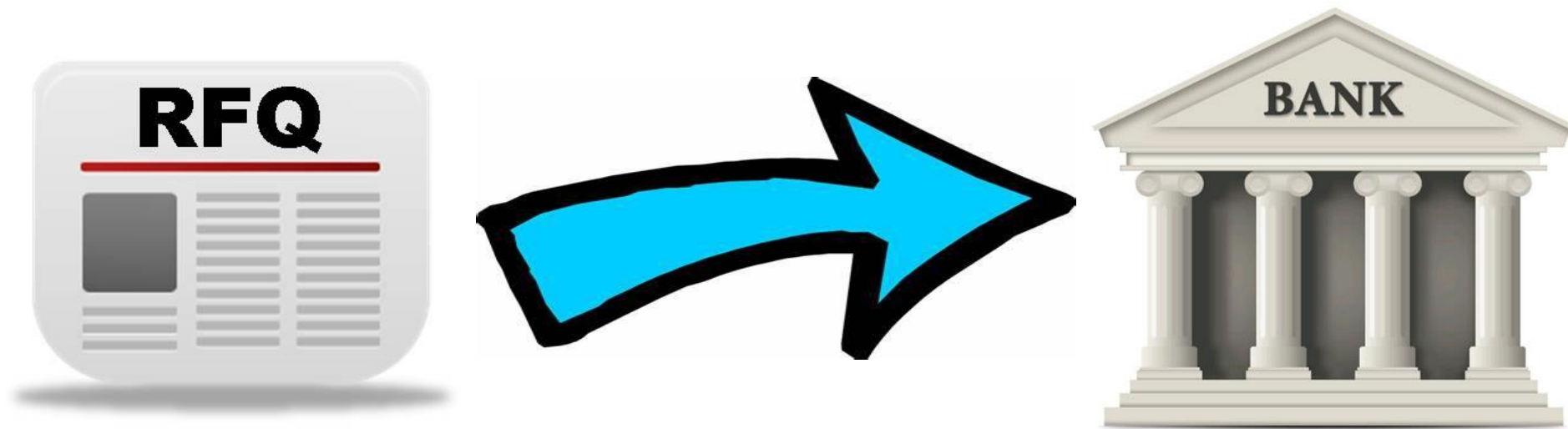


Velocity

THE “KEY” KPI

VELOCITY

The speed that you go from
Contact to Cash!



THE “KEY” KPI

VELOCITY



Pal's Sudden Service

- **20 seconds per transaction**
- **4X faster than second place**
- **Employee turnover half of industry average**
- **Ten times fewer mistakes than industry average**
- **10% of time devoted to training / learning**

**Hire for attitude
and train for skill.**

THE “KEY” KPI

VELOCITY



Open just six days a week!

Chick-fil-A's velocity is sky-high. According to data from QSR Magazine, in 2017 alone its average sales per restaurant was about **\$4 million**, compared to its competitor McDonald's, whose average was **\$2.6 million**.

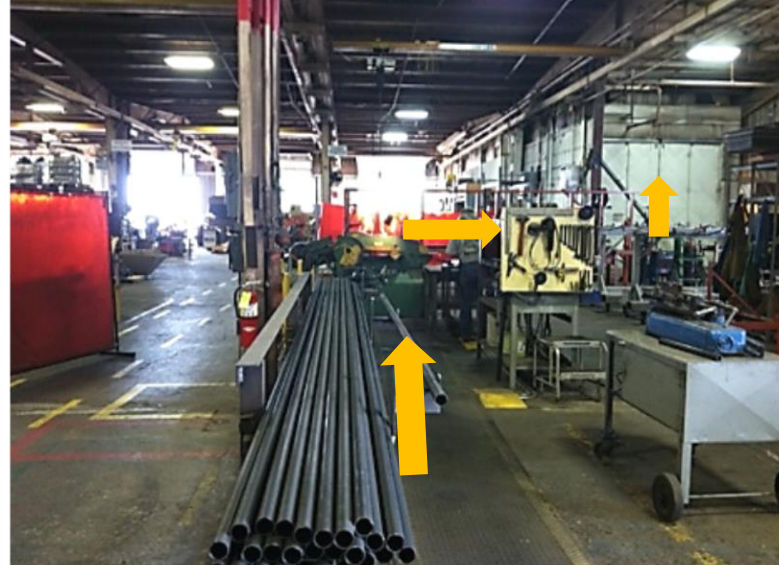
People enjoy/love working there.

Handrail Cell

Project Metrics Simplify Flow

Before

- Cycle Time = **1.52 days** (avg.)
- Rework = 1.1 hrs. / week
- Floor Space = 1387 sq. ft.
- Travel Distance = **1700 ft.**
- # of process activities = 54
- Operators = 1

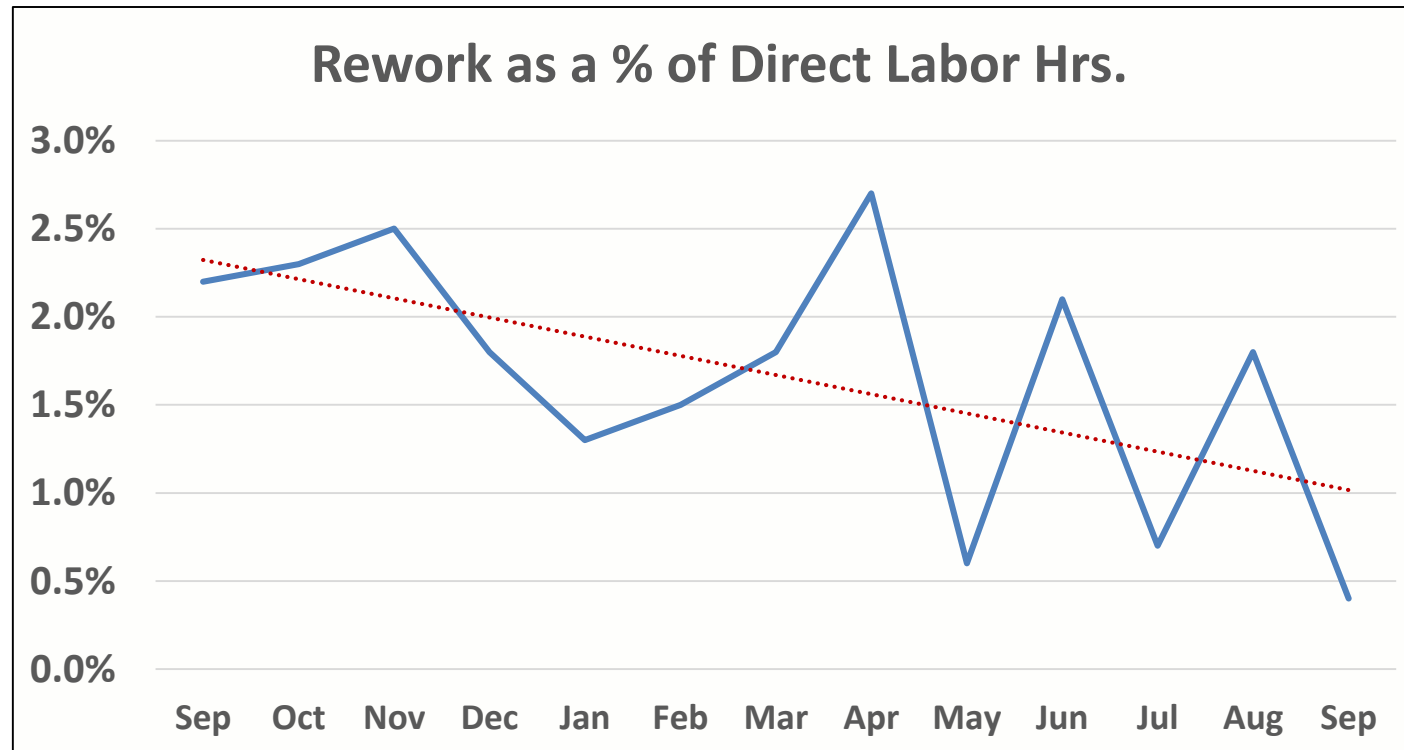


After

- Cycle Time = **1.2 hrs.** (avg.)
- Rework = 0.1 hrs. / week
- Floor Space = 1159 sq. ft.
- Travel Distance = **92 ft.**
- # of process activities = 24
- Operators = 1

THE “KEY” KPI

VELOCITY





Dilbert.com DilbertCartoonist@gmail.com



Purpose Driven Takeaways

1. Fly higher to reduce headwinds
 - ✓ *Customer Impact and Stewardship*
2. Go bigger: **Transform** versus *Change*
3. Equip people to be Empowered
4. Focus on Velocity



Thank You!

Your opinion is important

Please take a moment to complete the survey
using the conference mobile app

Session No: WS/27
Purpose Driven Lean

Jim Joyner
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JJoyner@AstecIndustries.com