



Process Improvement Simplified – Sustainable - Solutions

October 21, 2015



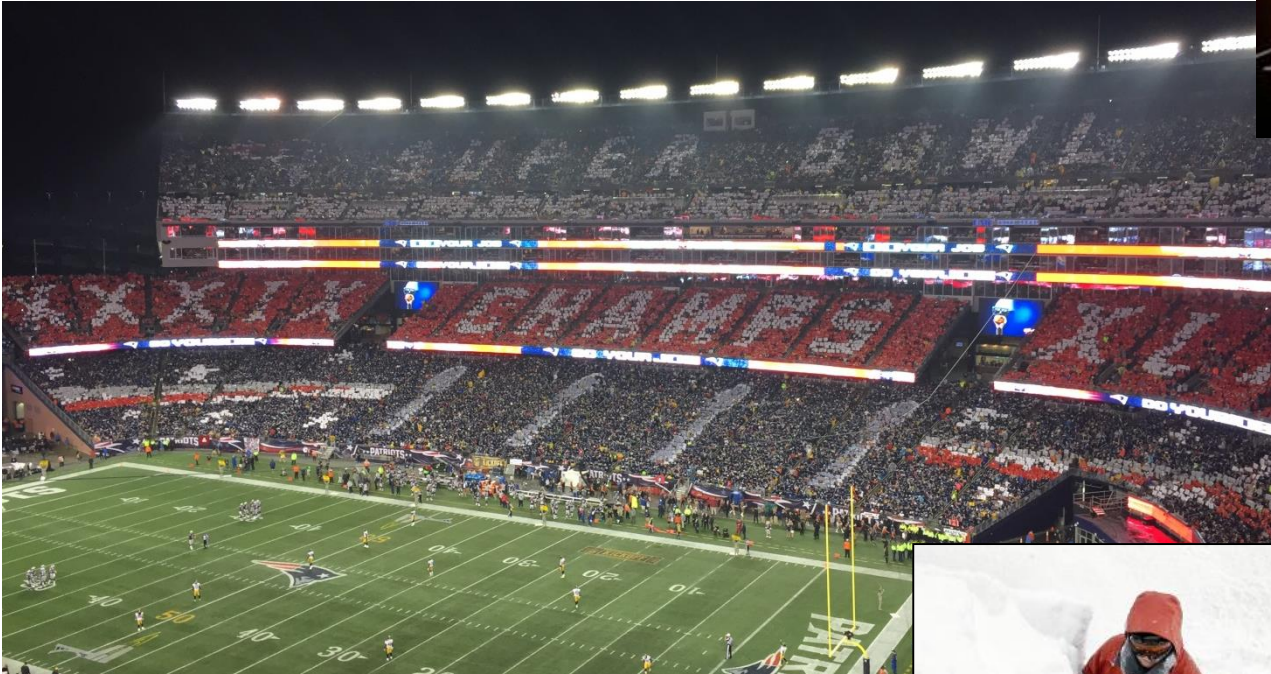
there is no [r] in words like
park (pawk), car (kaw), and
Harvard (Haw'vid).

Wicked Pissa
Salt and Peppa
Chowda



Don't Be Insulted When Someone Flips The Bird
No matter what in Massachusetts, you're always driving too slow.
Massachusetts folks are very nice people, until they get behind the
wheel of an automobile. Then it's anything goes.

Good things about Boston



Steve Carrell - Acton
Amy Poehler - Burlington
Denis Leary - Worcester
Steve Sweeney - Charlestown
Patty Ross - Boston
Conan O'Brien - Brookline
Steven Wright - Burlington
[BJ Novak](#) - Newton
Mike Birbiglia - Shrewsbury
Mindy Kaling - Cambridge
Patrice O'Neal - Roxbury
Lenny Clarke - Cambridge
Bo Burnham - Hamilton
Bill Burr - Canton
Matt LeBlanc - Newton
Dane Cook - Arlington
Josh Krasinski - Newton
Paula Poundstone - Sudbury
Rachel Dratch - Lexington
Jay Leno - Andover
Louis C.K. - Newton
Don Gavin - Boston
John Pinette - Malden
Doug Stanhope - Worcester
Nick DiPaolo - Danver

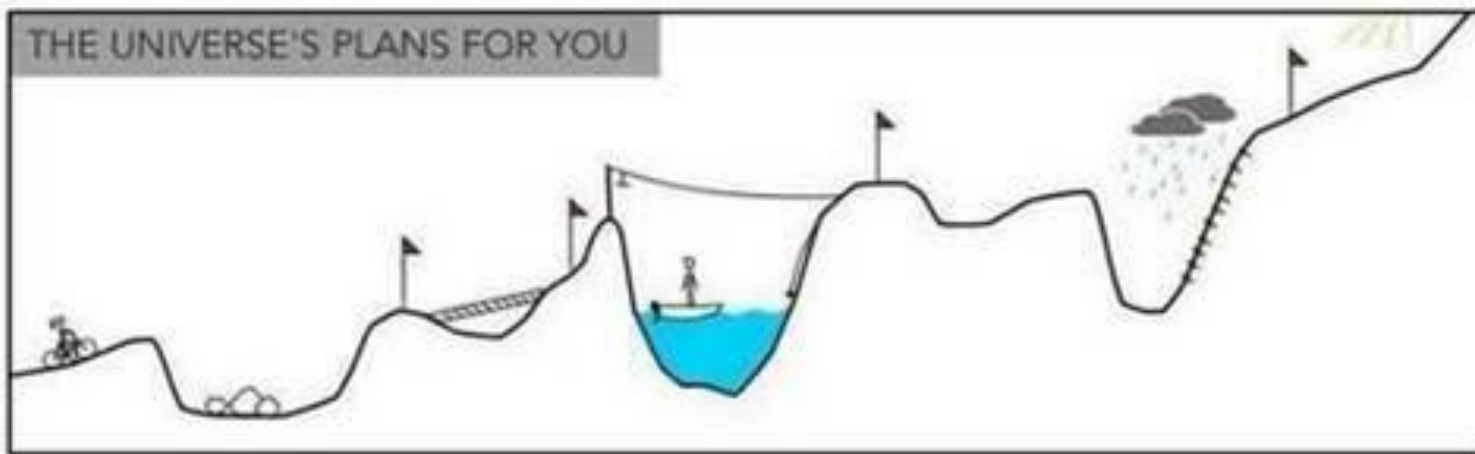
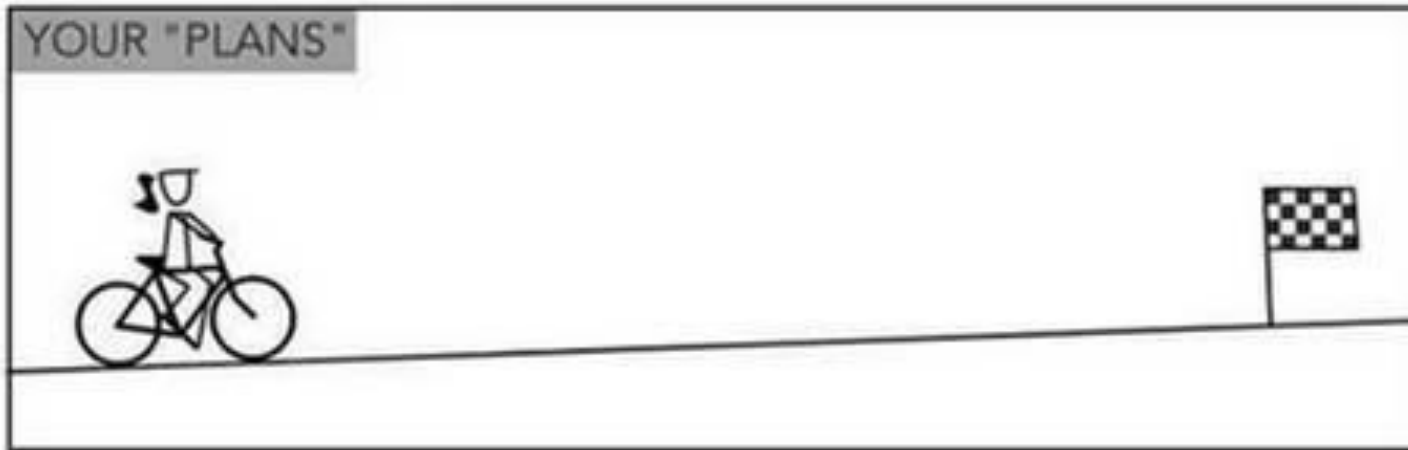
Topic for this evening

Process improvements are needed but always difficult to make the change. Quality professionals can create great solutions but the challenge to have them sustainable. This presentation will cover how to use some of the basic Quality tools to create simple solutions that can be sustainable.

Special requests?

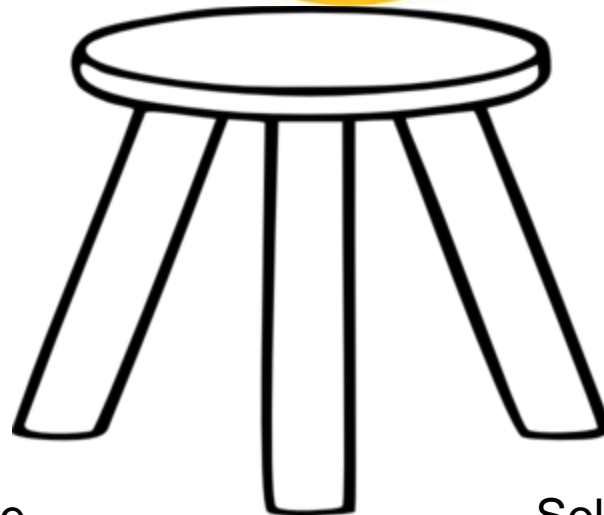


How change really happens



DOGHOUSE DIARIES

Successful Process Improvements

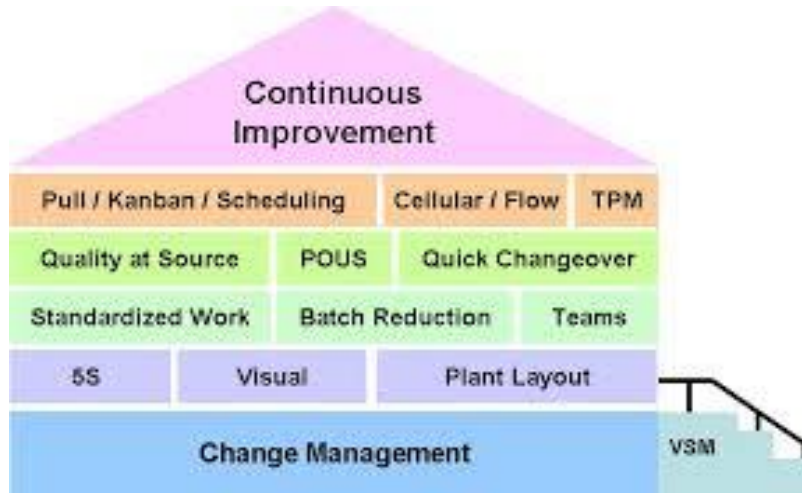


Simple

Sustainable

Solution

There are many tools and models to follow



Define	Step 0	Select a Project
Measure	Step 1 Step 2	Establish Performance Parameters Validate Measurement System for "Y"
Analyze	Step 3 Step 4 Step 5	Establish Process Baseline Define Performance Goals Identify Variation Sources
Improve	Step 6 Step 7 Step 8	Explore Potential Causes Establish Variable Relationship Design Operating Limits
Control	Step 9 Step 10 Step 11	Validate Measurement System for "X" Verify Process Improvement Implement Process Controls

The DO IT² Problem Solving Model

FIND IT^{*} Diagnostic Phase

1. Define the Problem
2. Understand the Process
3. Identify Possible Causes
4. Collect Data
5. Analyze the Data



FIX IT^{*} Solution Phase

6. Identify Possible Solutions
7. Select Solution(s) to be Implemented
8. Implement the Solution(s)
9. Evaluate the Effect(s)
10. Standardize the Process

** IT means root cause of the problem!*

© 2006 Duke Okes



Effective Tools are the easiest to use

- What is the end in mind?
- Prioritize
- Visualize
- How do you measure it?
- Remember it's about the people!
- Test the process



Begin with the end in mind

Mentor – Scott Gauvin

- What is the problem?
 - If you can't describe it, you don't know what the problem really is yet
- Why is this the “burning platform?”
 - With all the other priorities going on, why is this the one we need to work on now?
- What happens if we don't do anything?
 - Is someone going to get hurt? create bad product? create some future issue?

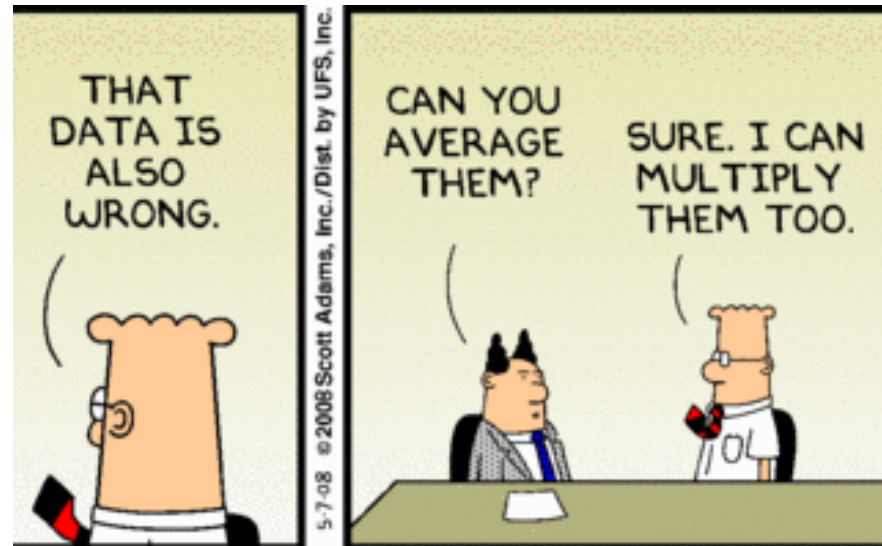


“If everything is a priority, then nothing is a priority” – *Steve Perez*

ASQ

Not that it's the priority yet, but ...

- How do you measure success?
- Who defines those metrics?
- Can the data be easily accessible?
- What is the data integrity?



IS/IS NOT – scope the problem

Focus	IS	IS NOT												
What	<ul style="list-style-type: none"> Filled assemblies from DVI of lower pressure ranges tend to have more calibration issues (3M, 5M) Calibration results/Categories from DVI do not equal calibration/Categories in Franklin which require further sorting, reworking and scrapping. Rigid, 6/18, 12/18 (standards) 	<ul style="list-style-type: none"> Filled assemblies from DVI with higher pressure (7.5M, 10M) Custom Custom/special Lengths, diaphragms Assemblies made for Viatran and other sites Assemblies made in Franklin 												
How Much/ Many	<ul style="list-style-type: none"> Based on a 40-piece sample; <ul style="list-style-type: none"> 69% Category 1 requirements from DVI, compared to 96-98% Category 1 requirements from Franklin Categories DVI ≠ Franklin, <table border="1"> <thead> <tr> <th>Category</th><th>DVI</th><th>Franklin</th></tr> </thead> <tbody> <tr> <td>1</td><td>< .40%</td><td><.25%</td></tr> <tr> <td>2</td><td><.7%</td><td>Rework if possible (crimping or retest)</td></tr> <tr> <td>3</td><td>≥.71%</td><td>Rework but usually scrap</td></tr> </tbody> </table>	Category	DVI	Franklin	1	< .40%	<.25%	2	<.7%	Rework if possible (crimping or retest)	3	≥.71%	Rework but usually scrap	<ul style="list-style-type: none"> Completed finished goods
Category	DVI	Franklin												
1	< .40%	<.25%												
2	<.7%	Rework if possible (crimping or retest)												
3	≥.71%	Rework but usually scrap												
When	<ul style="list-style-type: none"> Last 3-1/2 to 4 years 	<ul style="list-style-type: none"> Not aware of issues prior to the shift of manufacturing to DVI 												
Where	<ul style="list-style-type: none"> Franklin Pressure Melt line 	<ul style="list-style-type: none"> SPX, Industrial 												

Out of scope: Gaged assemblies, lifting and solder joints disconnected



Priority Tools



- “The Steve Jobs”
 - Yellow stickie's of ideas
 - Categories or quadrants
 - Vote on top ideas
 - ***Get down to top 3 and FOCUS only them***

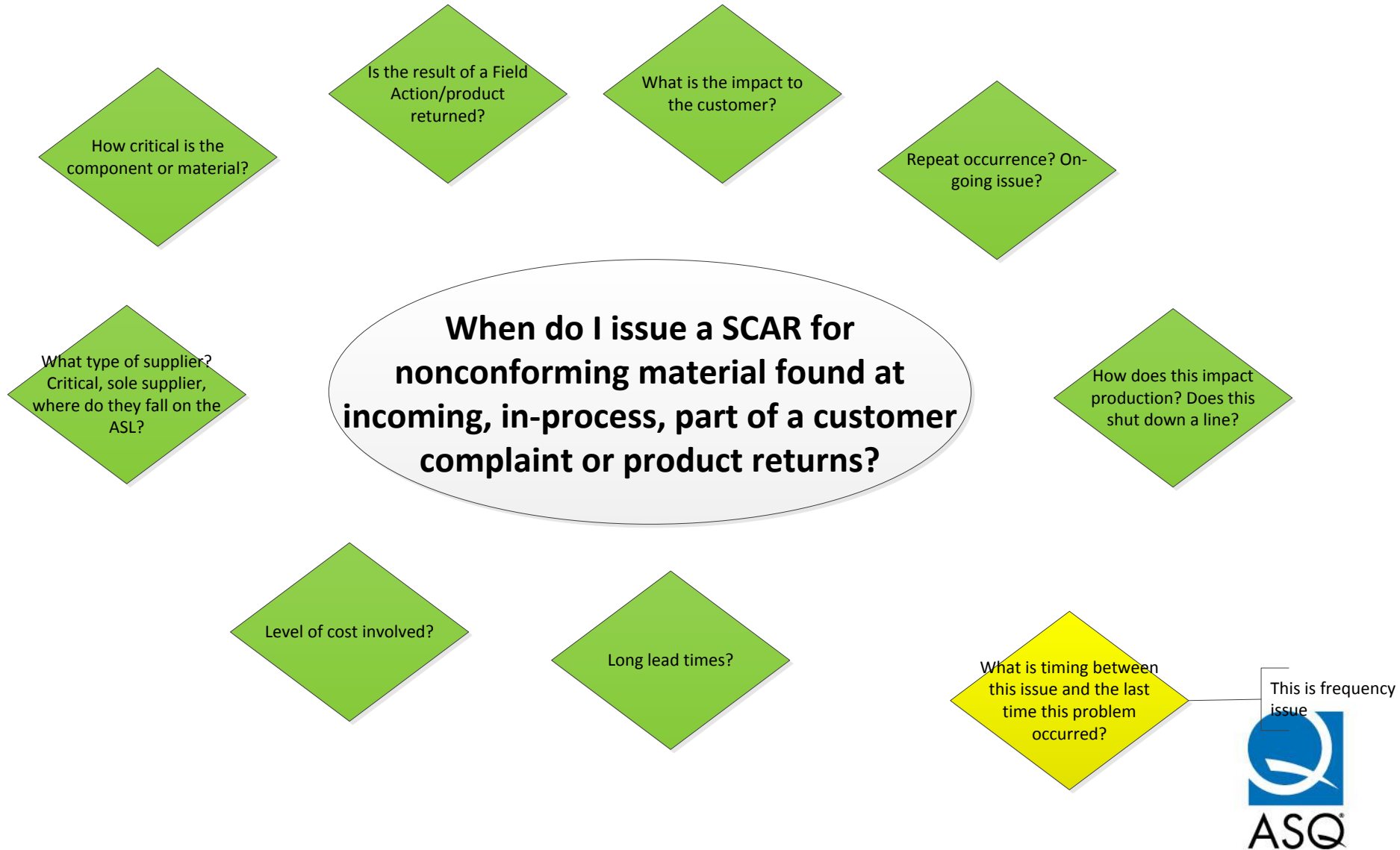
Combination of category/weighted priority matrix

14 Elements of SQM	QA Resources Required	Interdependencies to other Quality/Business systems	Interdependencies to other functional groups	Quickness to implement	Equipment or S/W required	Total	Impact to improvement	Overall Rating (= total x impact)
Supplier Audits	2	1	1	2	1	7	3	21
Approved Supplier Lists	1	1	2	2	1	7	3	21
Initial Qualification Activities	1	1	3	2	1	8	3	24
Supplier data	3	2	2	1	1	9	3	27
Supplier Performance Ratings	2	2	2	2	2	10	3	30
RI	3	3	1	2	2	11	3	33
FAI	3	3	1	2	2	11	3	33
Dock to Stock	3	2	2	2	2	11	3	33
Waivers/Deviations	1	1	1	2	1	6	2	12
SCAR's	1	1	1	2	1	6	2	12
Business Meetings	1	1	2	2	1	7	2	14
Quality Agreements	3	1	2	3	1	10	2	20
SQM Handbook	1	1	2	2	1	7	1	7
Get Well plans, contingency planning, TCO models, etc.	2	1	2	2	1	8	1	8

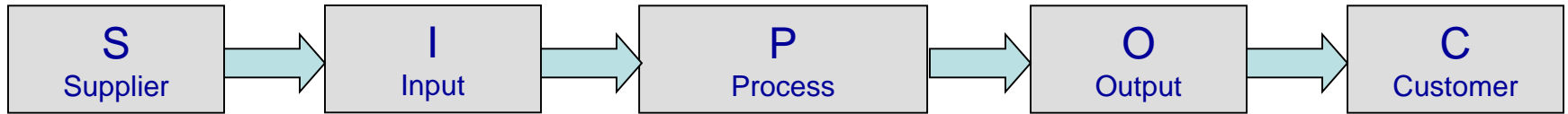
Visualize the problem

- Brainstorming
- SIPOC
- Flow charts
- Value Stream Mapping
- Get engagement and agreement on what is the process
 - “No hidden factories”
 - Everyone signs the document

Brainstorming



Supplier Input Process Output Customer (SIPOC)

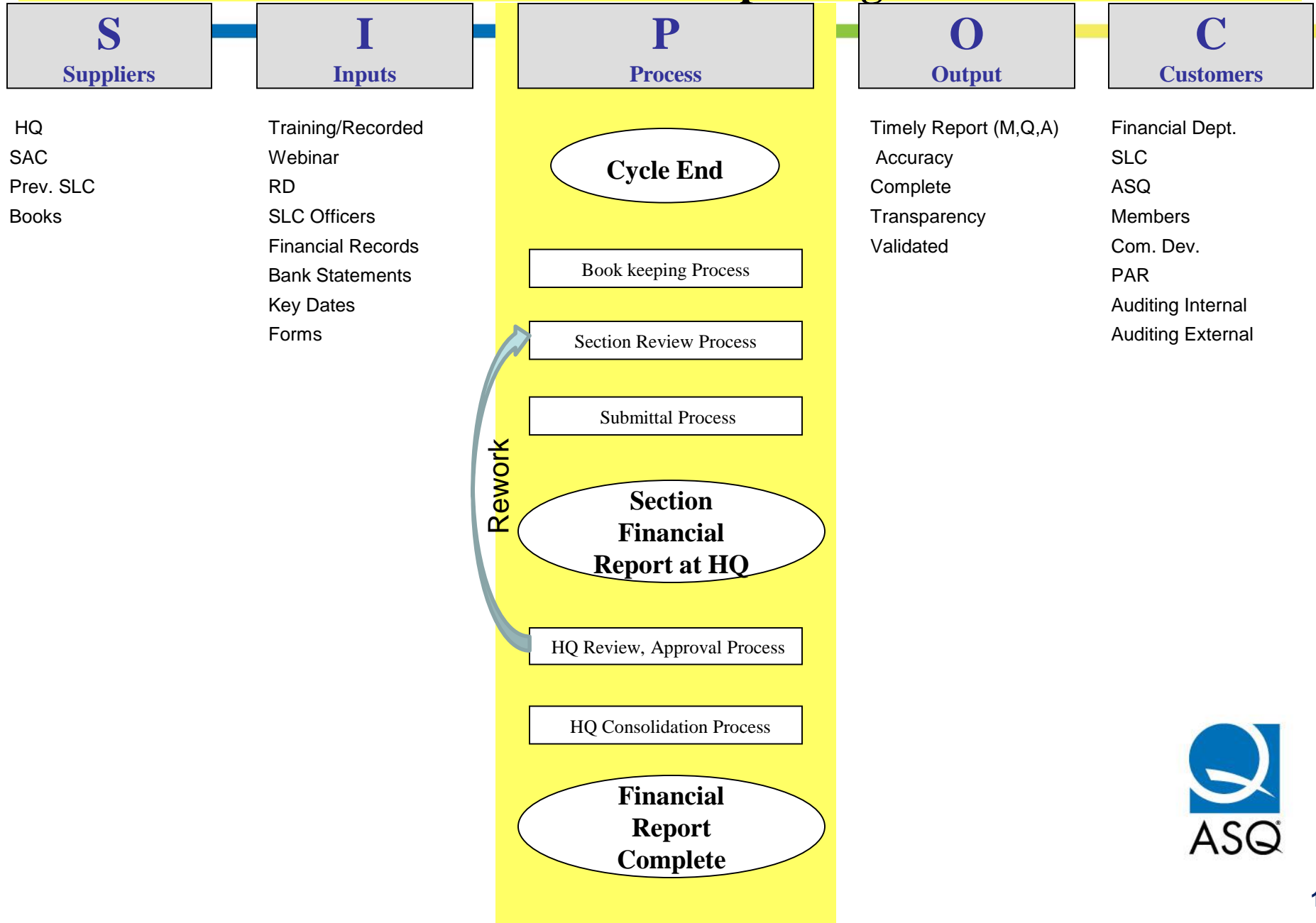


- Begin with the end in mind...start with the **C** (Customer) and work right to left.

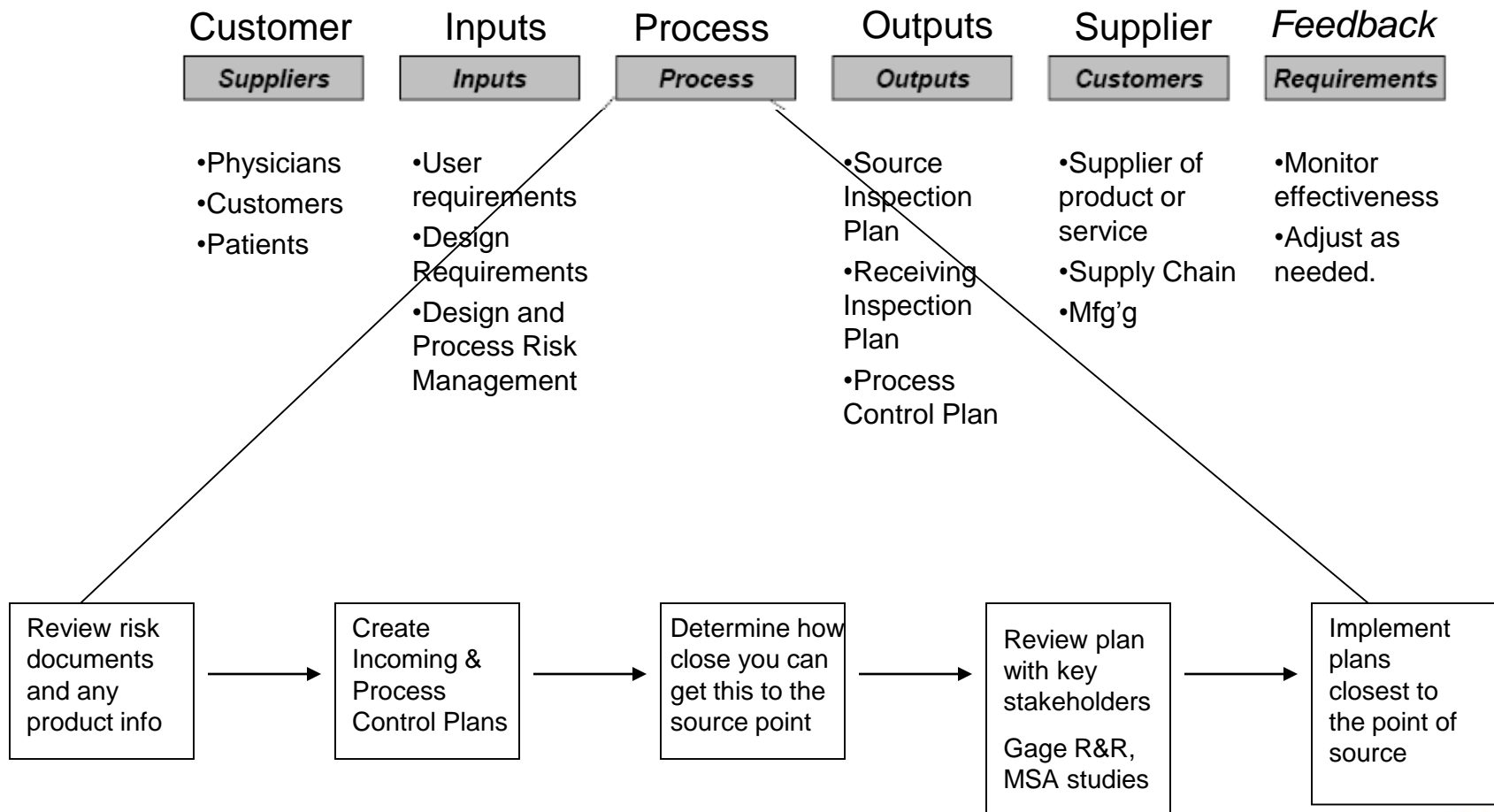
- Customer – related to the process being considered
- Output – what do these customer want from this process
- Process – Keep it Simple (High level: Start, Sub-Processes, Stop)
 - Note: Process Description should make sense when ending in 'ing' or followed by the word 'process'.
- Input – Critical inputs (not variables) to the process
- Supplier – Who supplies the critical inputs

PROCESS NAME:

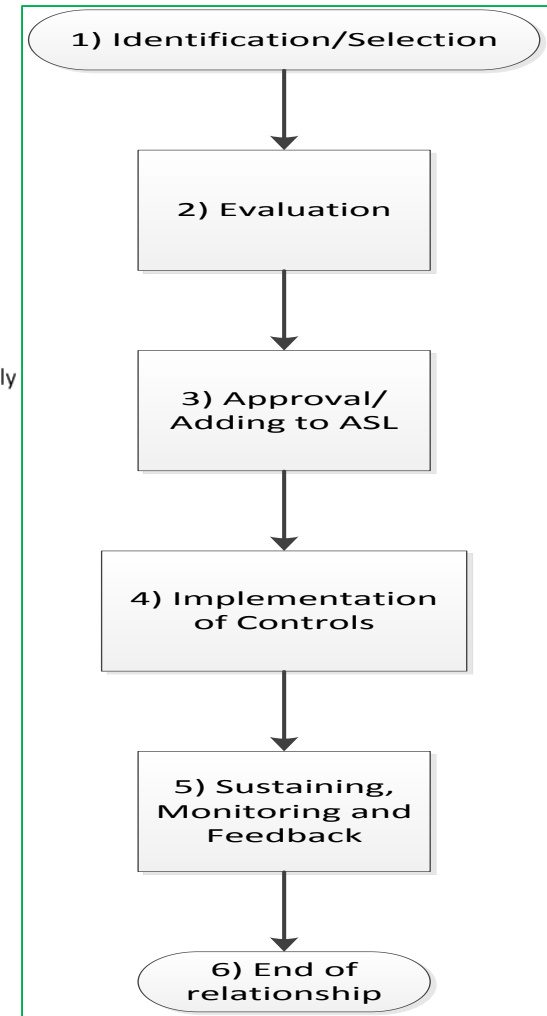
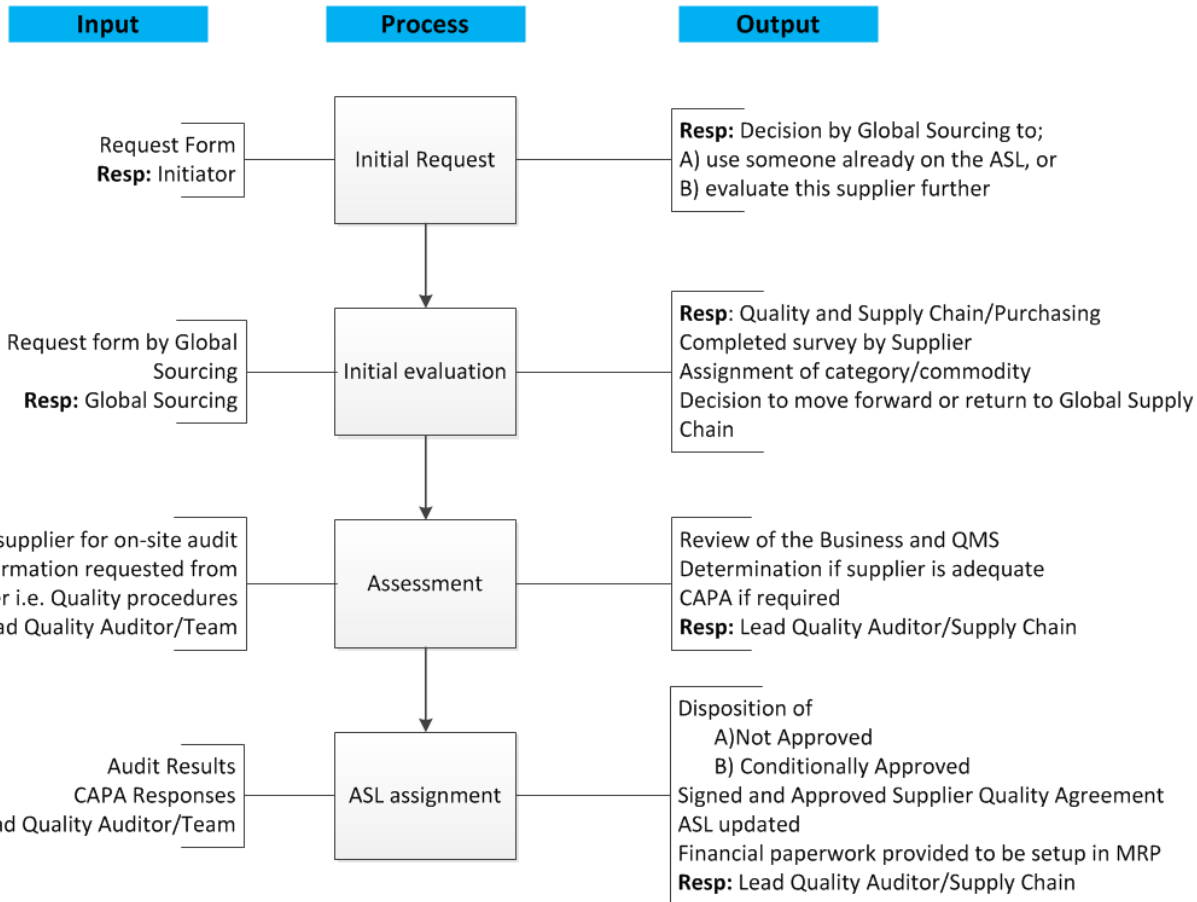
Financial Reporting Process



Strategic Supplier Map - CIPOS Diagram

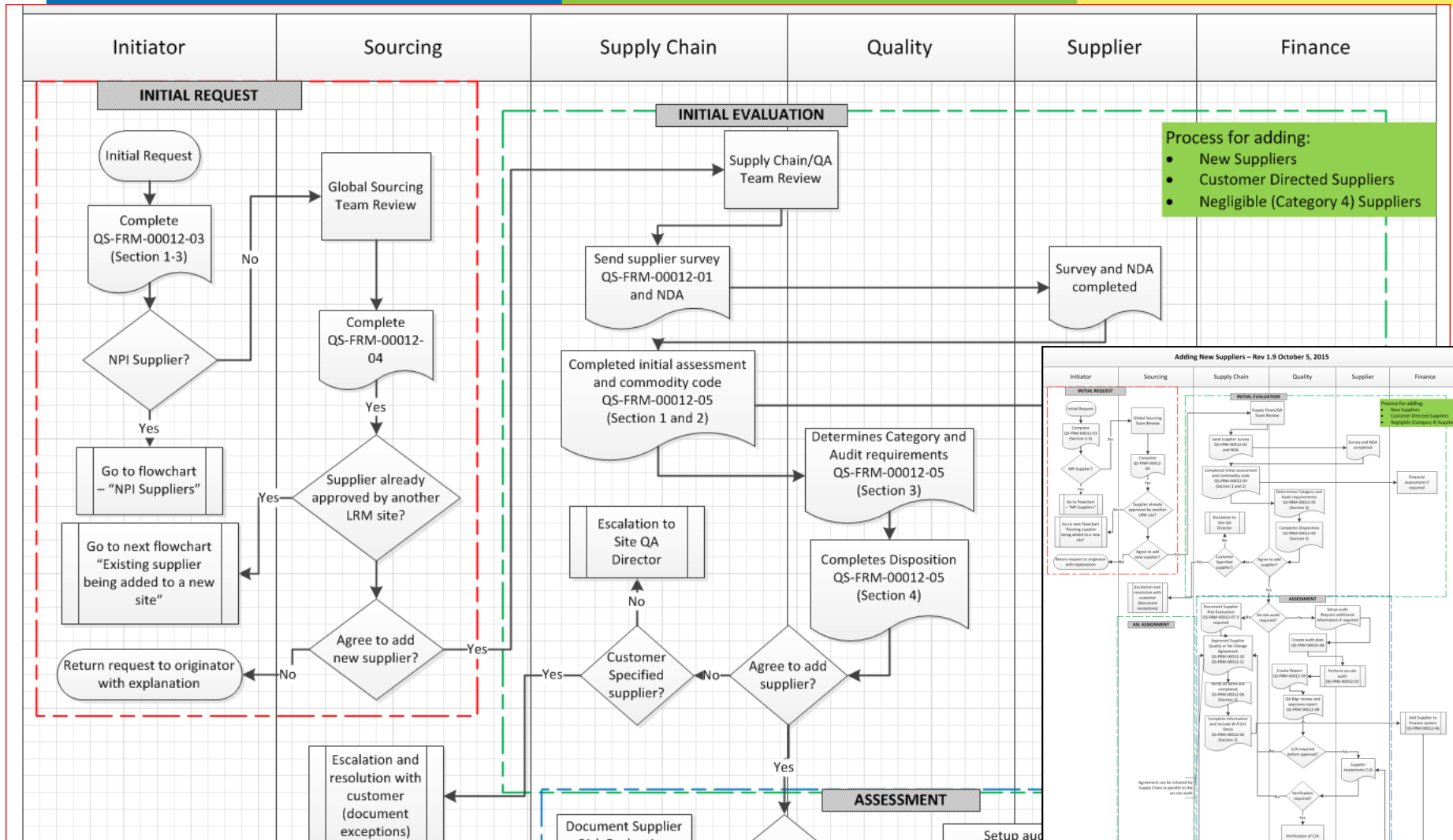


Visualize – Process Flow Charts

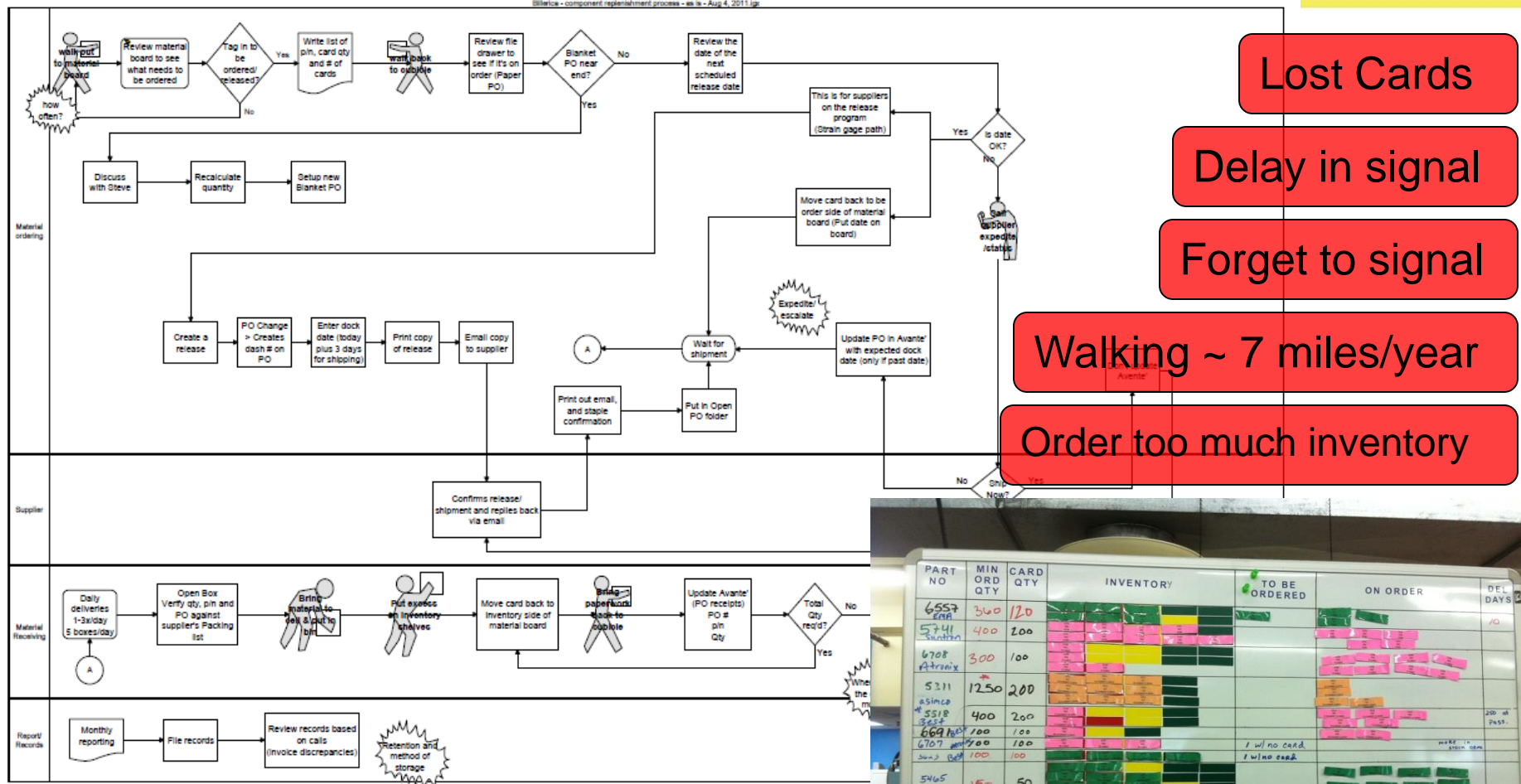


ASQ

Flowchart – “swim lanes” of responsibilities



AS IS map of current process



66 steps, 1 person (shipping and receiving)

PART NO	MIN ORD QTY	CARD QTY	INVENTORY	TO BE ORDERED	ON ORDER	DEL. DAYS
6557	300	120				
5741	400	200				
6708	300	100				
5311	1250	200				
4518	400	200				
669	100	100				
6707	100	100				
5465	150	50				
6705	2000	100				
4399	1000	250				
4665	2500	100				
6718	400	200				
3352	300	200				
6556	100	100				
6314	2000	60				

TO BE (Future) process

Real time status

No lost cards

Bar code

Kanban is consumed

Product is built

Elimination of walking

54 hours gained back to improve process

Bar code – eliminate data errors/10 second transaction



eKANBAN Supplier Portal

Page 1 of 2 (26 items) | 1 | 2 | 3

Drag a column header here to group by that column.

Location	Status	Supplier Card No.	Kanban Qty	Expected Date	Caught Date	Entry Date	Supplier Confirmation Date	Supply Type	Order Type	Kanban Status	Created DT	Item Ref
GLB: SMO	75%	K000002	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	69.0%	K000002	300	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	65.2%	K000003	100	11/1/2013	11/1/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	62.5%	K000003	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	60.0%	K000004	100	11/1/2013	11/1/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	60%	K000004	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	52.2%	K000009	100	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	50%	K000004	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	43.5%	K000071	100	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	40%	K000006	100	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	40%	K000006	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	37.5%	K000005	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	34.4%	K000073	100	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	30.4%	K000074	100	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	30%	K000047	100	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	26.1%	K000075	300	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	25%	K000006	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	23.7%	K000070	300	11/2/2013	11/2/2013	10/11/2013		Buy	False	Open	10/11/2013	2135
GLB: SMO	20%	K000007	200	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895
GLB: SMO	20%	K000008	100	10/05/2013	10/05/2013	10/11/2013		Buy	False	Open	10/11/2013	1895

Kanban Card Number
* 0 0 0 0 0 1 1 5 *

Purchase Order
* 0 0 0 0 0 1 1 5 *

Description
ELEM, 15K PSI, V-DETAIL, T16AL4V

Part Number
* 5 3 1 8 *

Supplier Name
VCK BEST MACHINE

Quantity
* 7 3 *

Bin Location
* KANBAN *

Supplier notified via email

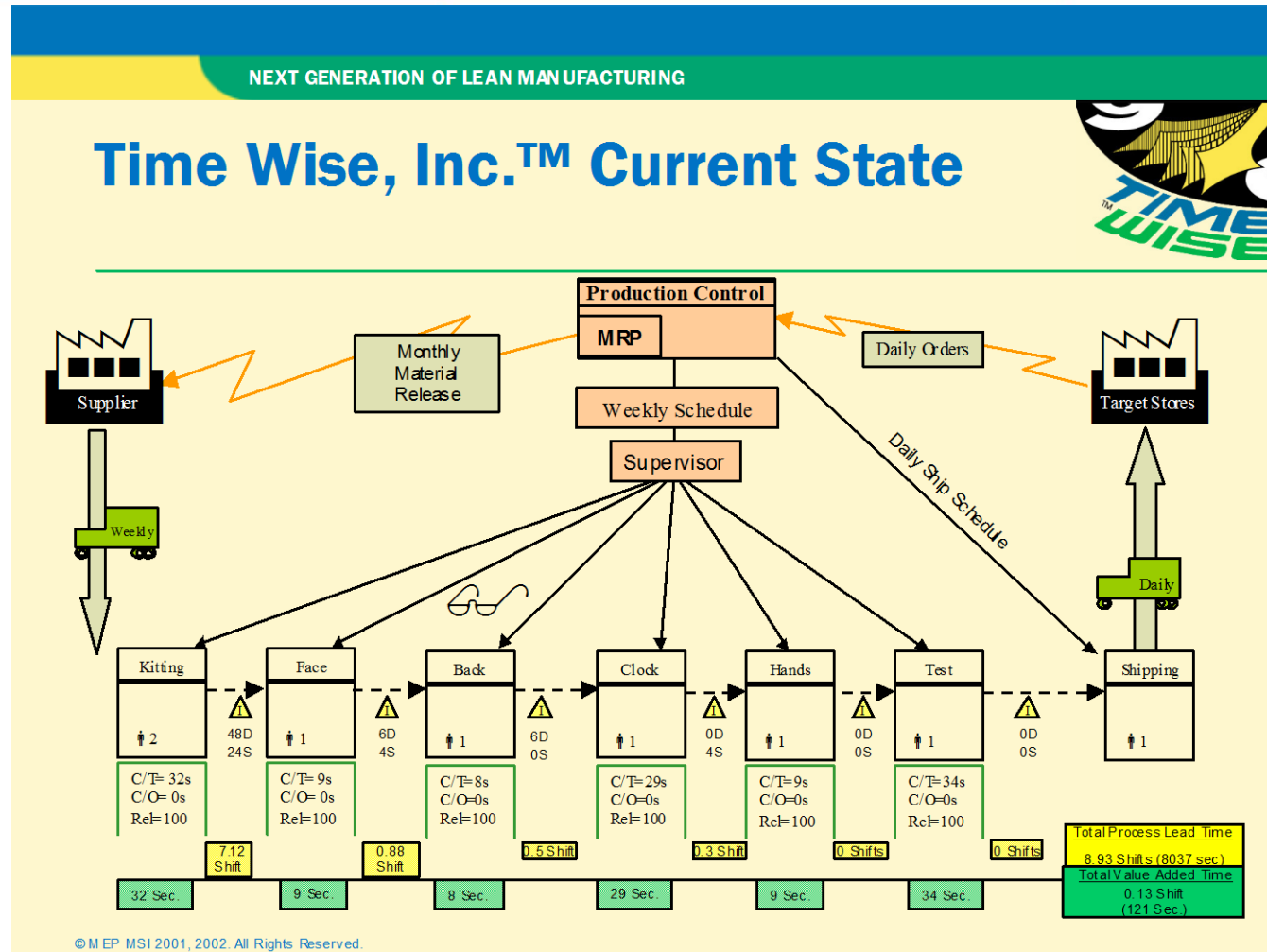
Real time signals

Material Shipped



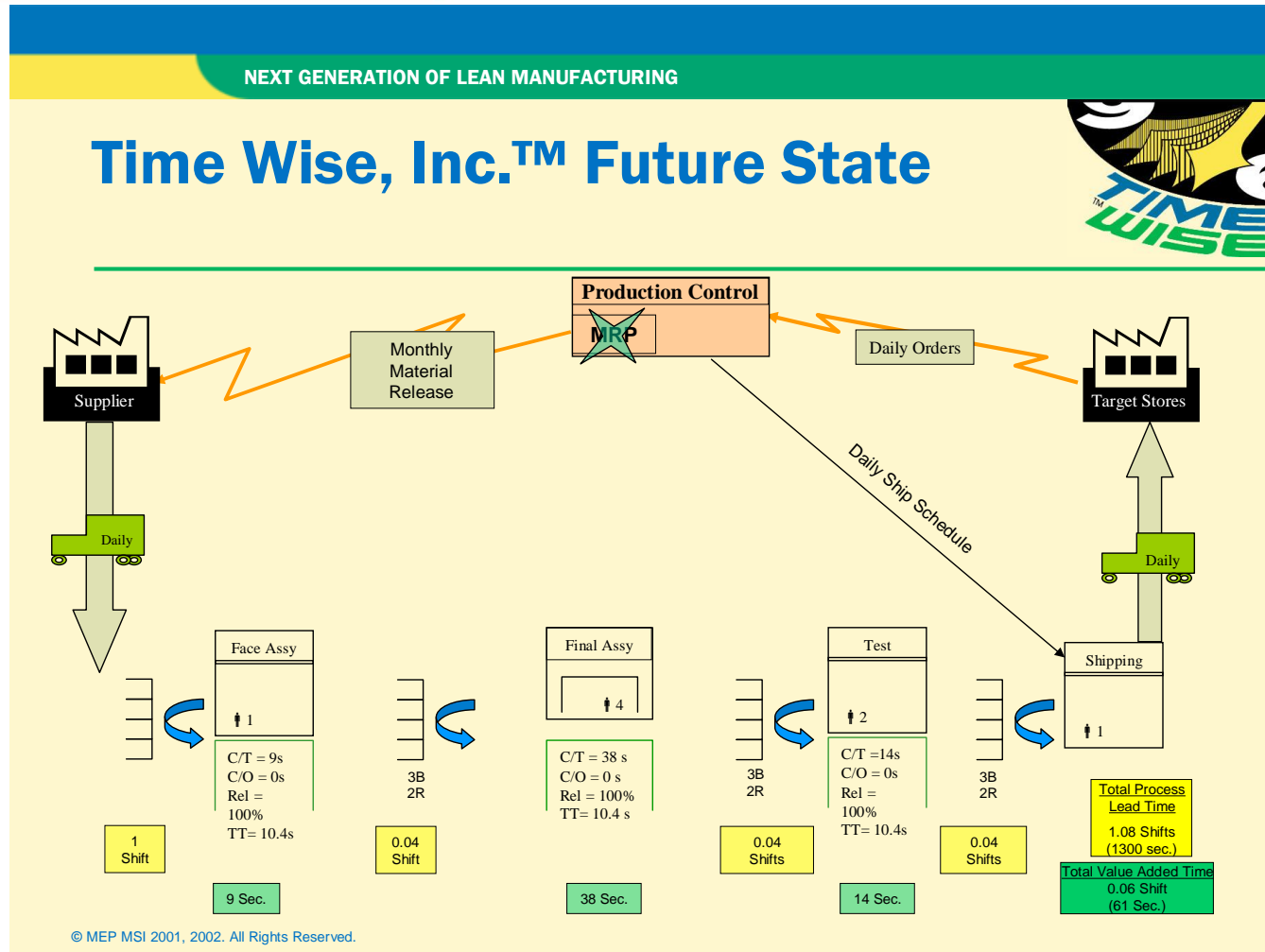
Material received

Value Stream Map: Current State



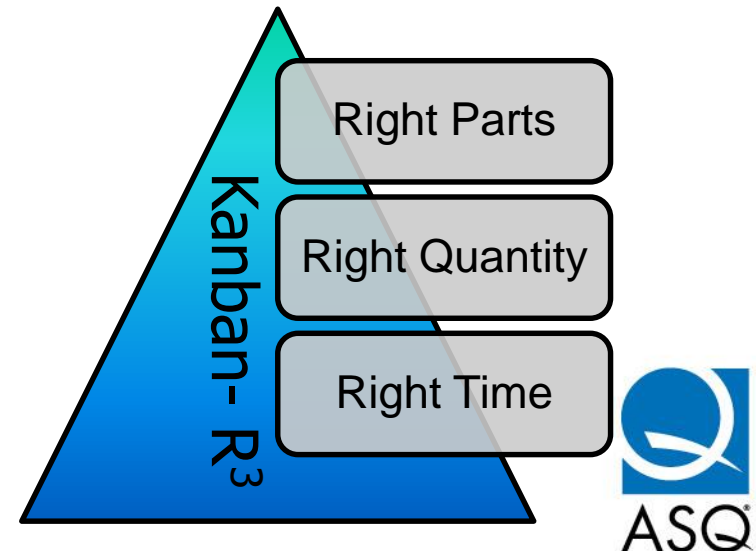
C/T – cycle time
 C/O – change over
 Rel – reliability(up time)

Value Stream Map: Future State



How do you measure success?

- Site annual spend of \$1.6M – purchased items
 - Inventory reduction 600K to 310K (50%) in 12 months (**Goal was 500K**)
 - Inventory turns from 8 to 24 (**Goal was 12**)
- Internal signal sent to internal cell to replenish
 - \$122K (59% reduction) (**Goal was 70%**)



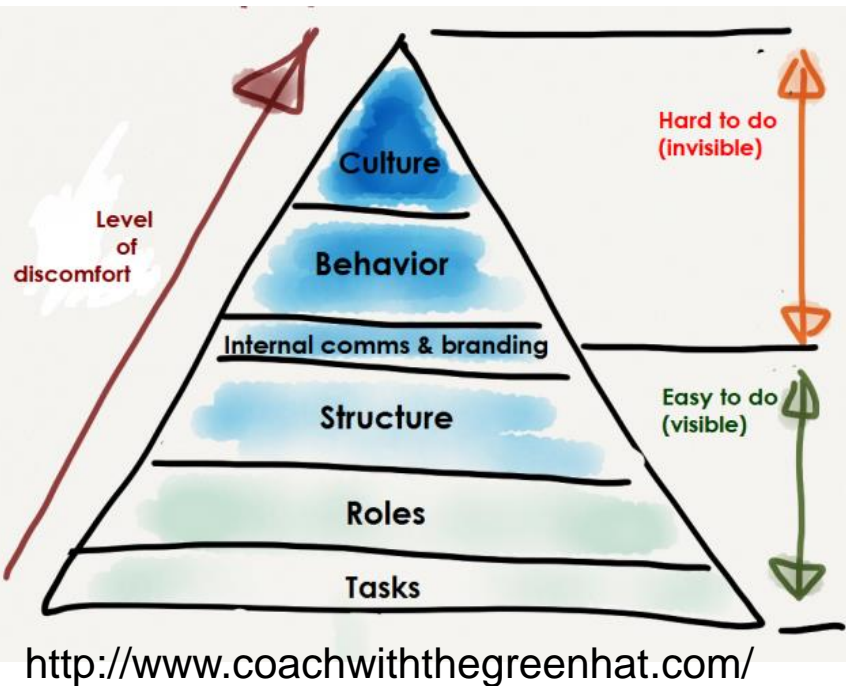
Test the Process

- Conference Room Pilots = Process Validation Plans
- Identify Scribe
- Observe the people and the activities
- Quickly deal with the on-off situations that don't occur frequently or have not happened in recently
- Document the win and publish it!

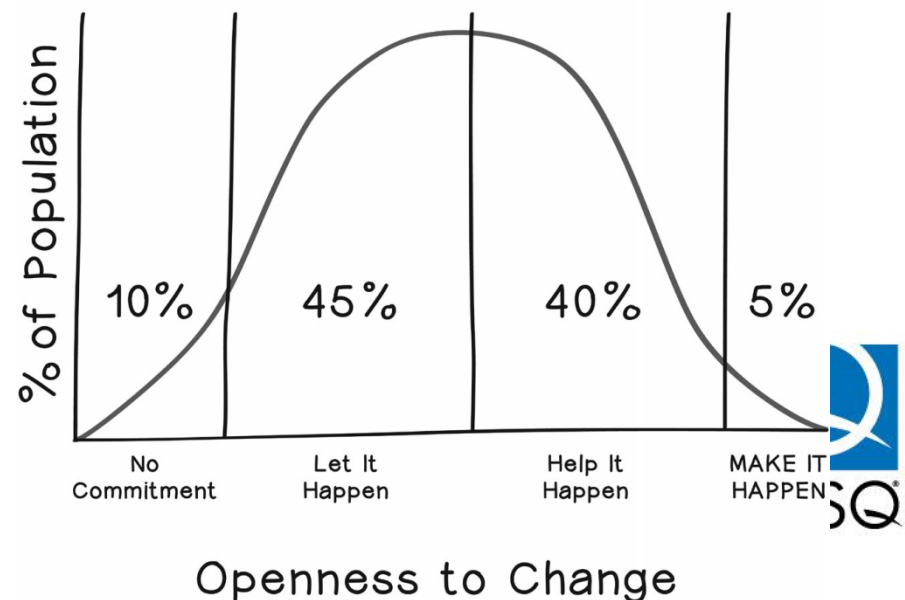
Conference Room Pilot

Process Step	Role(s)	Expected Outcome	Actual
New Supplier needed to support new project	Engineer	Submit New Supplier Request Form (QS-FRM-0004X -1) to Global Sourcing email <i>scenario # 1, attachment 1</i>	
Review request	Global Sourcing	Review and approve request, send results to Site QA/Supply Chain on form (Global Sourcing Review QS-FRM-0004X -2) <i>scenario # 1, attachment 2</i>	
Review and assess supplier	Site Quality/Supply Chain	Submit Survey Request to supplier (QS-FRM-0004X-3) Review Survey from supplier and determine risk level per Supply Chain/QA Review per QS-FRM-0004X -3 <i>scenario # 1, attachment 3</i>	
Audit Required and Conducted	Quality	Completes audit plan per QS-FRM-0005X and sends to supplier Conducts audit per checklist QS-FRM-0003X Completes audit report per QS-FRM-0006X NOTE: Audit went well and no C/A was required	
Disposition of supplier determined	Site Quality/Supply Chain	Complete Vendor Setup Form QS-FRM-0004X-4 and submits to "Vendor Management" <i>scenario # 1, attachment 4</i>	
Data entry/verification	Site Quality/Supply Chain	Data entered into ERP by Supply Chain per Vendor Setup Form QS-FRM-0004X-4 Information verified/records in place by Quality <i>scenario # 1, attachment 4</i>	

Remember it's about the people!

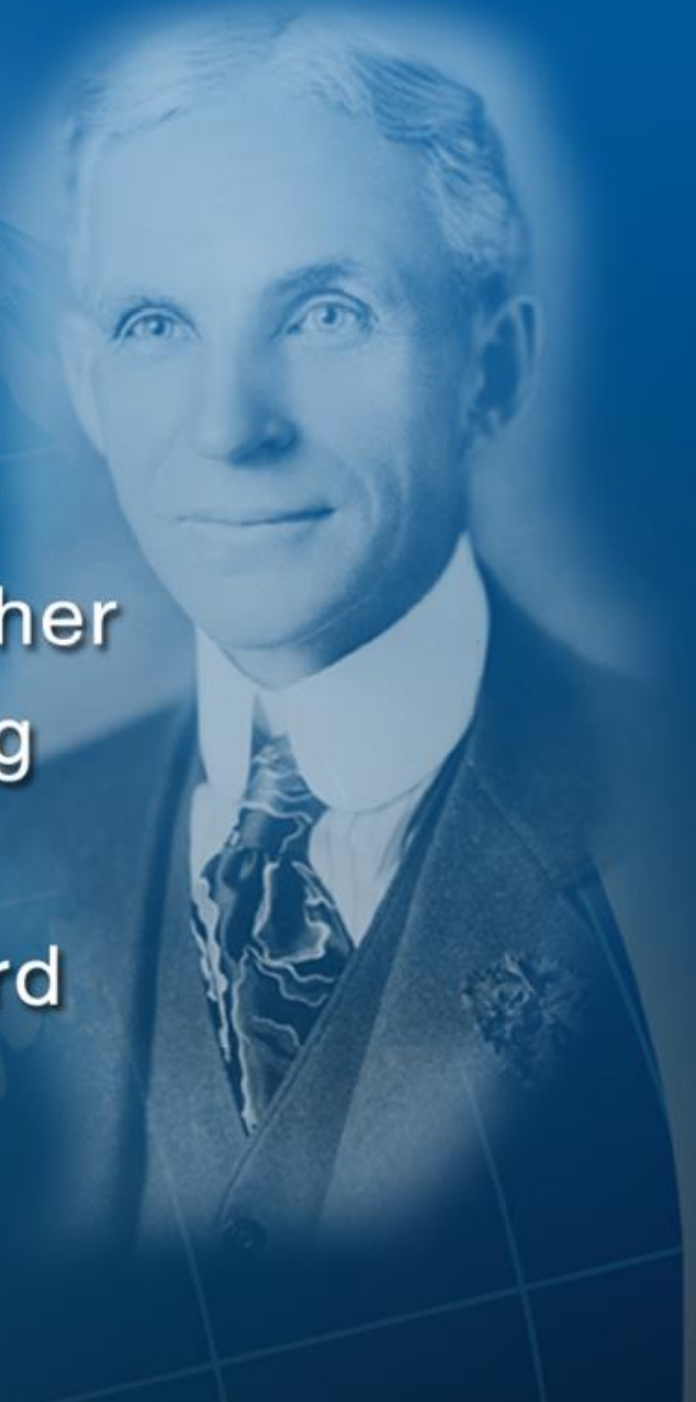


Distribution of Change Adoption



“Coming together is a beginning, keeping together is progress and working together is success.”

-Henry Ford



Lessons Learned

- Don't automate until you know the process really well and can do it well manually first.
- Incremental improvement that is sustainable is better than a mediocre archaic poor process.
- People will follow a bad process they understand.
- Don't let procedures prevent you from doing the right things – that's why we have Quality Plans/Deviation Waivers.
- “Locks only keep the honest people out.”
Companies hire hackers to test their security systems – do the same with your process.



Last note

If you can
read this
thank a
teacher



If you like
your
freedom,
thank a
Veteran

“Son, on behalf of a grateful Nation...”





Jim Shore,
Principal – Quality Lean Solutions
www.qualityleansolutions.com
Jim.shore14@gmail.com
www.linkedin.com/in/jimshore
508-726-0574 cell

Thank you!

