Linking Lean & Quality Systems With Business Strategies (via Hoshin Kanri)

Jd Marhevko

VP QLMS & EHS, Accuride Corp

FOUR (4) Time AME Manufacturing Excellence Site Winner 2018 Industry Week Manufacturing Plant of the Year





Accuride Wheel End Products













Heavy-Duty Truck (Class 8)



Medium-Duty Truck (Class 5-7)



Trailer



Light Truck (Class 3-4)







Learning Objectives

Across this time we will...

- Tactically apply Define, Measure, Analyze, Improve and Control (DMAIC) to link Lean Management System (LMS) strategies to that of the organization via Hoshin Kanri
- See how this lean tool can be applied to any business
- Increase your understanding and ability to create
 waves of excellence and engage yourself in the
 development, management and execution of a strategic
 plan



A Definition of Lean



Lean is *FLOW* through pull. It uses an enterprise-wide set of concepts and tools. Lean strengthens an organization's competitive advantage realized from operating its processes



Elements for Lean Success



- 1.Lean "Operations". Effective, Efficient flow of Product
- 2. Transactional systems: Effective, Efficient flow of Data/Information
- 3. Align Product & Transactional Value Streams across the Enterprise
- 4.Incorporate External Partners: Customers, Supply Chain, Contract Services, etc



Lean & DMAIC: Strategically



External/Internal customer needs are identified ("Interested Parties")

Measure

Determine performance baselines. Identify necessary target levels

Analyze

Investigate causes for gaps from performance to target. Create a plan

Improve

Execute the improvements identified. Use tools to fit the problem

Control

Monitor the results. Hold gains via accountability





Define





The "X-Matrix"

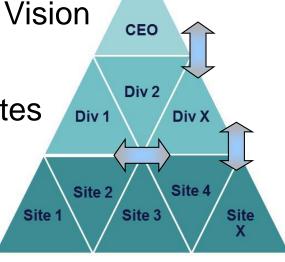
A Process to convert *Strategy* to *Reality* by using both <u>horizontal</u> and <u>vertical</u> alignment in the organization

CEO's 3-5 year Strategic Vision

Planning across Division(s).

Vertically supports CEO and Sites

Site planning. One year tactics to support and execute the strategy

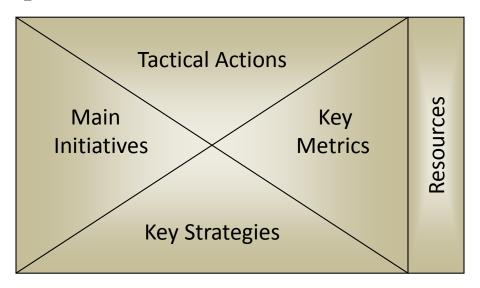


aka...Hoshin Kanri





Sample "X-Matrix" Format



Bottom: Key strategies. Use a "SMART" format

Left: Initiatives on HOW to achieve the objectives

Top: TACTICAL actions to execute the initiatives

Right: Key METRICS used to monitor results

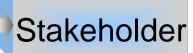
Far Right: WHO has line item responsibility



Strategies For "Interested Parties""



People that use the end product/service



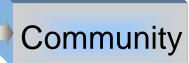
Personnel that invest in the organization (stockholders, investors)



Personnel that run the organization. May be paid or voluntary



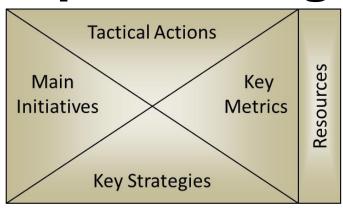
Businesses/donors that provide goods and services usually for a fee

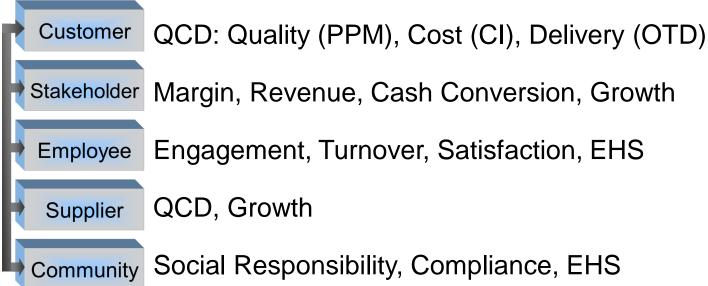


Local organizational. Surroundings. Environment, tax-base...



Sample Strategies







X-Matrix Worksheet

Key Strategy Samples...

- 1. Increase margin by 5% by 4Q
- 2. Increase sales revenue by 10% by 4Q
- 3. Increase organic growth by 5% by 4Q (existing business)
- 4. Increase inorganic growth by 5% by 4Q (new products)
- 5. Increase New Produce Introduction (NPI) rate by 10% by 4Q
- 6. Grow market share from 15% to 20% by 4Q
- 7. Reduce warranty expenses by 25% by 4Q
- 8. Reduce internal rejects by 25% by 4Q
- 9. Reduce lead time from 7 days to 5 days by 4Q
- 10. Reduce supplier reject rate by 50% (20K DPPM to 10K)
- 11. Improve customer satisfaction score by 20% by 4Q
- 12. Reduce recordable safely incidents by 50% by 4Q
- 13. Increase employee morale by 10% by 4Q





X-Matrix Worksheet

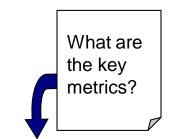
Identify the top 1-3 ways of HOW you will attain the strategy

Identify the top 1-3 tactical plans to achieve the initiative

Main 1-3 Tactical Plans

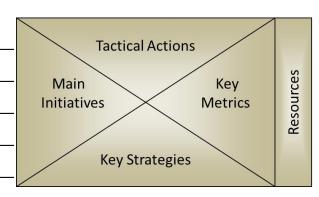
1.1a ____

1.1b



Key Input Metrics

Main 1-3 Initiatives



Key Strategy/Performance Goal (SMART)

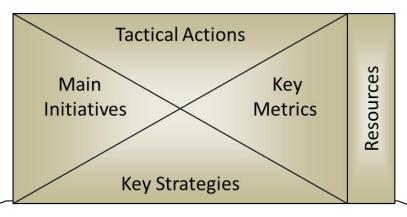
1.1a

1.1b _____

1.1c ____

Write a sample Key Objective

Define "SMART" Strategies



~6-8 Key Strategies

 Improve Margin by 5% points by 4Q. Increase of \$250K Select your strategy

Key Strategy/Performance Goal (SMART)

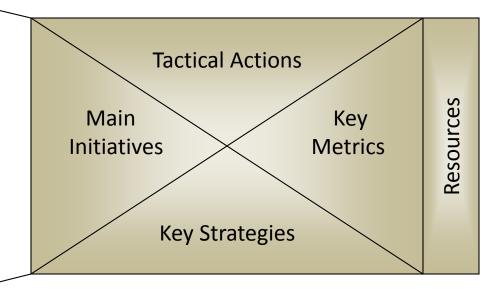
While developing the Key Strategies, multiple tools may be used such as SWOT, VOC, etc. Consider a "multi-customer" approach to support organizational robustness





~1-3 Main Initiatives per Strategy

- Reduce Warranty losses. \$150K
- Reorganize Product Portfolios \$100K



Main 1-3 Initiatives
1.1
1.2

Improve Margin by 5% points by 4Q. Increase of \$250K





Develop Tactics



Improve Margin by 5% points by 4Q: Increase of \$250K



Leading & Lagging KPIs

Lagging KPIs are usually results to upper management. Work to identify and manage leading KPIs that will affect these results

Sample Leading KDIs	Sample Lagging KPIs											
Sample Leading KPIs	OTD	PPM	COPQ	\$Conversion								
OEE: Operational Equipment Effectiveness	+	+	+	+								
RTY: Rolled Throughput Yield	+	+	+	+								
%Cpk: Processes Capable of Meeting >=1.33	+	+	+	+								
MTBF: Mean Time Between Failure	+		+	+								
C/A %Repeat: Repeating Complaints		+	+									
Training Depth: Personnel Skill Levels		+	+									
Linearity: Production Schedule Attainment	+		+	+								
C/A TTC: Time to Close Corrective Actions		+	+	+								

Develop Metrics

Implement Warranty Team. Conduct CA/PA

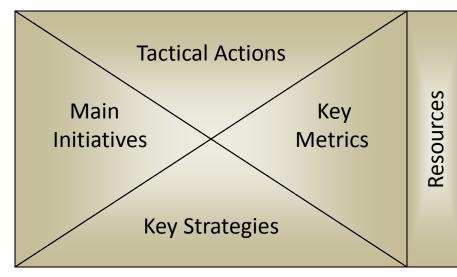
Conduct FMEA/CP Reviews on loss leaders

Conduct VSM on Portfolio. Rationalize

Who: Joe Who: Tom

Who: Sue

- Reduce Warranty losses. \$150K
- Reorganize Product Portfolios \$100K



Improve Margin by 5% points by 4Q: Increase of \$250K

Key Metrics

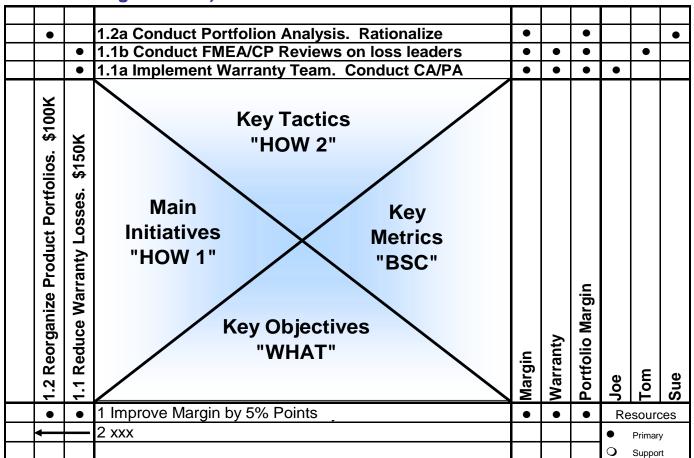
- Margin
- Warranty
- Family Portfolio Margins

Identify KPIs							
Key Input Metrics							
1.1a							
1.1b							
1.1c							



"X-Matrix" How It Looks

X-Matrix: Organization, Year







Sample X-Matrix: ASQ QMD

$\overline{}$								C:\Documents a	and Se	ettings	marh	evjd\M ₂	/ Doci	ument	s\ASQ\	QMD :	Strat P	lan &	BSC [Data\[QMD	Strat P	lan 08	Q2 QM	IP 08 0	J9 v1.xls]Succe	ession
																						П				T		
	•)						6.1e Develop/Execute go-forward functional conference committee structure Chair, F2F	•	•										•	•	•	•			0	T	\top
	•	,						6.1d Develop/Execute plan to better utilize volunteers Mmbrshp								•	•					П	\top	П	•	, —	\top	\top
•				•			•	6.1c Share Lessons Learned across ASQ (Ex. DMA, X-Matrix) Chair, Chair-Elect	•											•		• (•				C	O
	•	,						6.1b Manage and facilitate attainment of budgeted plan <i>Treasurer</i>					•	•	•	T	T			•	•	П	•	П	\top	0	\top	\top
•								6.1a Develop/Utilize succession planning, strategic management of board, and key measures Chair, Chair-Elect								•	•			•	•	• (• 0				T	
		•						5.1a Develop a Strategy to Collaborate w/ASQ on EoQ/Social Responsibility (Mason) 7C	•													П	\top	П	\top	T	•	•
			•					4.1c Develop/Execute effective Web-site in which to grow exposure and customer support, and delivery mechanisms e-based	•		•			•	•	•	•		•			П	\top		0	T	•	\top
			•					4.1b Select organizations/venues win ASQ (Div's, Sections, HQ, etc.) and tailor service or product offerings and interaction methods Mktg	•						•	•	•		•			П			•		•	•
			•					4.1a Identify Opportunities and Leverage QMD offerings into non-ASQ/alternative venues (ie. State Award Program Offices, etc) Mktg	•	•				T	•	•	•					П	\top	\Box	•	TT	•	•
•	1		•	•			•	3.1a Develop Feedback/Feed Forward Loops, Review VOC data, Summarize results, Develop Next Steps and Feed into QMD Strategies Mktg	•	•	•	•		•	•	•	•		•			H	\top	Ħ	•	11	0	\top
	+		•		•		•	2.1.c Execute to a defined Touchpoint Plan (Tradeshows, Conferences, Forums, Courses, etc.) include Lisa Bray (ASQ)	•	•	•	•	_		•	•	•	•				0	5	H	+	•	+	+
	1		•	•	•		•	2.1b Develop Partnership Plan w/ASQ on non-US Growth (China/India, ROW) Mktg						•	•	,	•		•				\top		•	T	\top	\top
•	_		•		•	•		2.1a Develop Marketing Plan to grow Membership Base Mktg		†			•	•	•	,	•		•				+	Ι,	•	+	+	+
Ė	\top		Ė			•	_	1.2b Deliver CMQ/OE, CQE, CQIA Refresher Courses and Cost of Quality Courses as needed F2F	•	•		•	•	•	•	_	•	•	Ė			0	+	\vdash	+	•	十	+
	+				•	•	1	1.2a Support the CMQ/OE Certification (BOK, Exam Review, Item Writing) - Ops	•	•		•			-	_	•	_				Ť	+		+	Ħ	+	•
	+		•	•	Ť	Ť	•	1.1f Manage a project that utilizes F2F, Web & Print to bring pertinant information/training to QMD Members Print, F2F, e-Base	i	•	•	Ť	-	-+		_	Ť	Ť	\vdash		Н	\vdash	+	•	+	+	+	Ť
	+			Ť	•		•	1.10 Grow QMD membership of certification holders (CMQ/OE, CQE,) and conference attendees that are non-QMD members Mktq		•	•		•	•		÷		•				H	+		•	++	+	0
_	+		_		Ť		÷	1.1d Determine web-content (search engine, articles, courses, skills training webinars, forums, etc.) to be provided through the e-based market		ř		_	-	-		Ť	÷	ř		-		\vdash	+	 	-	++	+	+-
L	_		•	•	•		•	channel based on VOC criteria with Tech Cmte input - e-based		_	•		-	•	•	_	•		•			\sqcup	Щ.	_	0	$\bot \! \! \bot$	•	4
ㄴ	4	•	•		•		•	1.1c Determine offerings (articles, courses, skills training, tracks) to be provided at relevant events based on VOC criteria - F2F, e-based		₩	•		-	•	•	_	₩	₩	•	<u> </u>		ш	—	0	_		• •	<u>'</u>
•	4			•	•		•	1.1b Manage the annual QMC F2F		•		_	_	•	•	<u> </u>	┺	_				ш	Щ.		0	•	4	4
Ш							•	1.1a Publish/Maintain the Quality Management Forum Print	•		•		•	•	•							ш		•	丄	ш	丄	
Strategic Planning methods & Action Plan	through on key plans and objectives	ue to develop and deliver E	y sponsoring partners and develop service offering model	elop Feedback Loops and Review VOC ta	elop Market Strategy to Grow Membership	.2 Support the CMQ/OE certification process	.1 Leverage our organizational structure to develop nd deliver products and services	Top Level Improvement Plans Convey lifelong quality related knowledge through information, methods and tools that add value to Organizations, Society and Individuals Convey lifelong quality related knowledge through information, methods and tools that add value to Organizations, Society and Individuals Key Success Indicators (KSI's) and Outcomes	ning Documents/Events (OO 3, 5)	at QMD activities/sessions (OO 2, 3, 4, 5, 6)	Hits (OO 1, 3, 4, 5)	& Trend (OO 1, 2, 4, 5)	ings Balance, Liquidity (00 4, 5	Ĕ	orum Unit Cost/Member (OO 4, 5) Iembership Rate (Include Intl Growth) (OO 1, 2, 3, 4, 5,) etention Rate (OO 1, 2, 4, 5, 6)	ew Membership Rate (OO 1, 2, 4, 5, 6)	w/ASQ Certification(s) (OO 1, 2, 3, 4, 5)	/ State/Country (OO 1, 2, 3)	Objectives Achieved (OO 5, 6)	Planning Depth (OO 5, 6)	Chair: Heather McCai	Chair Elect: Jd Marhewk Treasurer: Katrina Harr		VC Marketing: Milt Krivokuc		Based Intilatives: Ron I	VC Technical Cmte: Steve Bab VC Operations: Carol Kurl
S	Follow		.1 Identify	3.1 Develor	2.1 Devel	1.2 Suppo	- a	1. (1, 2, 3) Membership Expertise: Provide products/services that develop continuous improvement and enhance our memberships'		Attendance	Web-Site H	Oty of CMQ/OE's	Checking a	Period Rev	Forum Unit C Membership	6) Retention h	New Memt	Members v	Members by	● %Objective	Succession			Primar		ponsibi esponsi		
6.2 Use	10m 6.1	•	4 0		•	•	•	skills	•	Ť	•	_	-	-	_	+-	-	_	_	•	•	ļ						
6.2 Use	10rn 6.1	•	•		•	•	•	skills 2. (1, 4) Membership Growth: Continue to grow the Membership base and improve upon retention	Ĺ	•	Ů	•	•	•	• •	•	•	•	•	•						Į		
6.2 Use	10m	5		•	•	_	•	skills 2. (1, 4) Membership Growth: Continue to grow the Membership base and improve upon retention 3. (1, 2) Determine VOC: Get feedback so that the QMD can define the product and services that are needed	•	Ť		_	•	•	• •	•	•	•	•	•) A S			
6.2 Use	10rn	•	•	•	•	_	•		Ĺ	•		•	•	•	• •	•	•	_	•	•				Λ.	AS	Quality	•	
6.2 Use	10th	•	•		•	•		3. (1, 2) Determine VOC: Get feedback so that the QMD can define the product and services that are needed	•	•		•	•	•	• •	•	•	_		•				A	AS Ma	Quality nagemen		





ASQ QMD Result

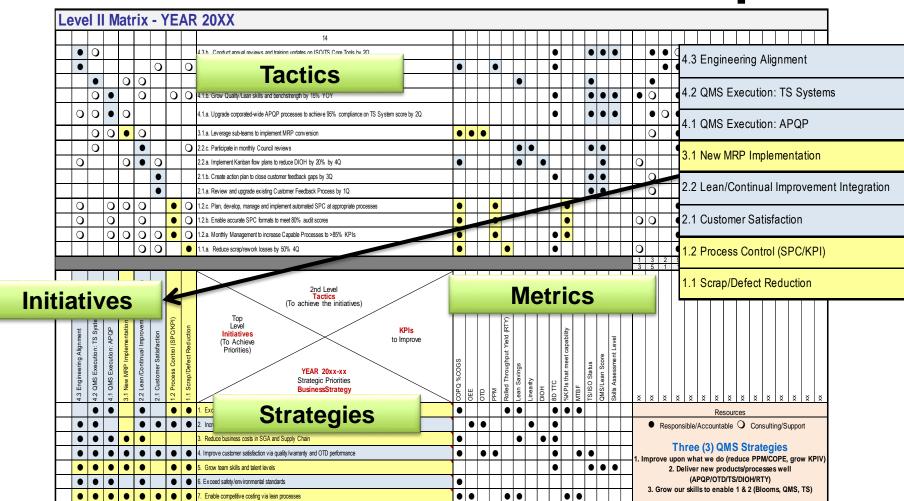
- Largest quality professional organization in the world at > 21,000 global members
- Largest division in ASQ of >70,000 global members
- Most touch points (member-valued interactions) of any division at >30/year

A Non-Profit Organization



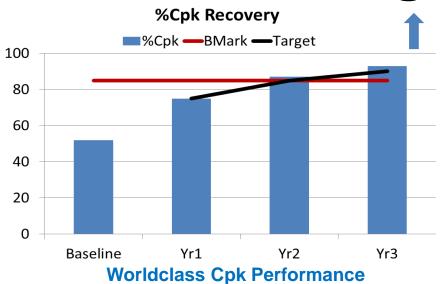


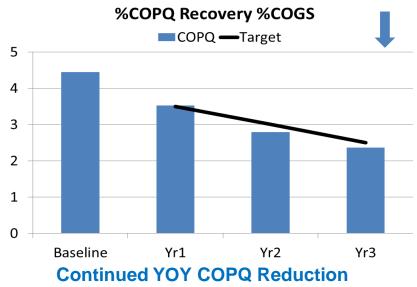
A For-Profit X-Matrix Sample





It Must Be Right For It To Flow



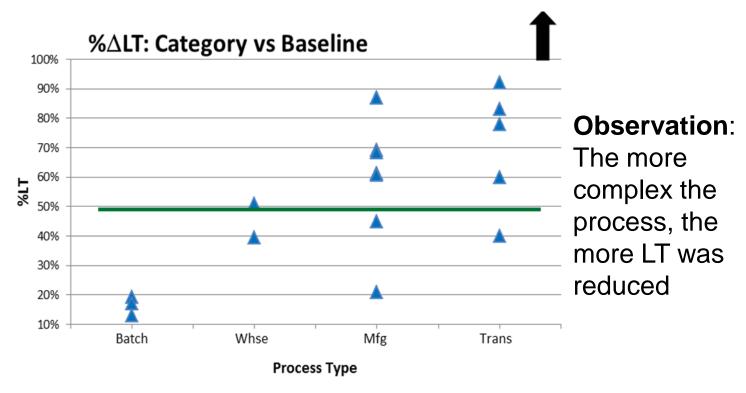


Leverage a three-point QLMS strategy:

- 1. Correct issues that are causing losses. %Cpk/COPQ focus
- 2.Design/Develop new products (NPI) and processes so that new issues are not "released" causing business losses. DFSS
- 3.Effectively train personnel in two skill sets: A. Corrective Action and B. Preventive, Risk-Based Thinking (RBT)



Flow Means "Go" 50-50-20



- An average reduction of 50% LT had much less working capital
- Enabling the average Productivity to increase by 50%
- And the average CPU to be lowered by more than 20%



Sample VSM: NPI



_____ 170 Days ____

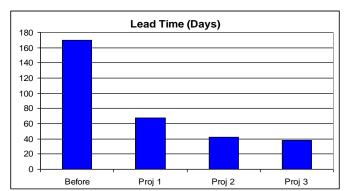
Initiative: Reduce New Product 40 Days

Introduction Lead Time

Action: Conduct value stream map

review. Implement fixes

Results: 70% Lead time reduction. Team able to increase NPI output





Measure

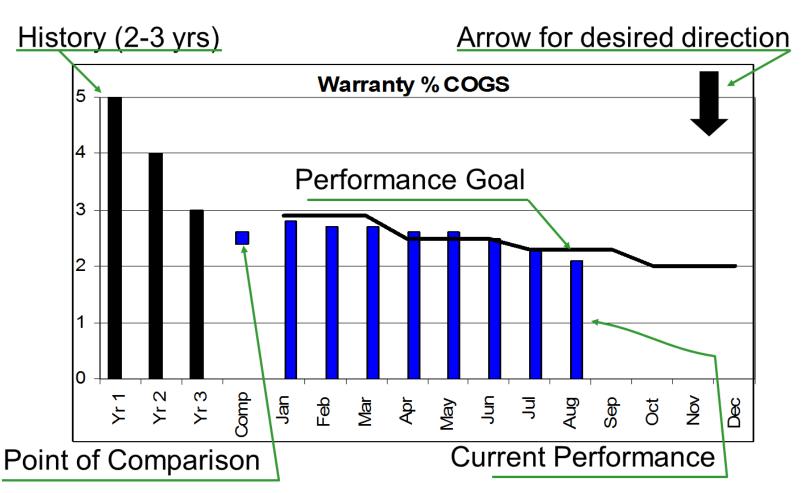
What gets measured gets done.

Don't know who said it, it works...





Sample BSC Format





Analyze

To know and not to do is not to know.

Chinese Proverb



Product Portfolio...5% Margin





Ex: If targeted margin is 5%, then 8+ Items were meeting the 5% objective before and 14+ were meeting the objective after

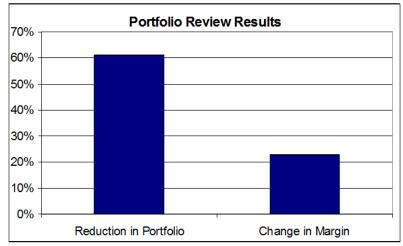
Initiative: Improve margin by 5%

Action: Conduct VSM review on

portfolio mix. Rationalize

products. Continue to prune

Results: 22% Improvement in margin base





Improve

Even if you're on the right track, you'll still get run over if you just sit there.

Will Rogers



Leveraging the X-Matrix (HK)

Hoshin Kanri is not the same as Management by Objective (MBO)

Source: Toyota Culture – Jeffrey Liker and Michael Hoseus (2008)

Management by Objective (MBO)	X-Matrix (Hoshin Kanri)							
Results-oriented evaluation of effort	Concerned with both results and process of getting those results							
Top-down communication	Top-down direction setting and bottom-up flow of information and means							
Directive	Participative							
Linear (no feedback, no second chance, just start over from scratch each time)	Circular (adds feedback loops (aka Catchball) and cycles of improvement)							





Control

There is nothing as useless as doing something efficiently that which should not be done at all...

Peter Drucker



We Strategically Applied DMAIC...



We used an X-Matrix to define our customer needs (internal/external)

Measure

We used a BSC to determine baselines and set our target performance levels

Analyze

We used VSM to investigate causes for gaps and created a plan of attack

Improve

We executed improvements and used tools to fit the problem (VSM, TPM, SUR, EP...)

Control

We used the BSC and HR systems to enable accountability



What's Next? Create Waves of Excellence... Get Engaged

- Learn your organization's strategies
- Match those strategies to your objectives
- If they don't match, adjust accordingly
- Share how YOU and your TEAM are making a contributory difference to enabling the strategies to occur
- Demonstrate YOUR relevance!





Thank You!

Your opinion is important to us!

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

Session No: ThS/44
Linking Quality & Lean Systems
with Strategic Plans
Jd Marhevko
Accuride Corporation
JdMarhevko@AccurideCorp.Com



Sources/Ideas

There are hundreds of excellent books/tools/sites, etc. Here are few that I have used as recent references:

- Accuride Corporation. Lean Management 50-50-20. Marhevko, Srivastava, Blair
- ASQ Quality Management Division. ASQ-QM.org.
- ASQ.org
- AME.org
- Lean Enterprise Institute (LEI) at Lean.org
- Superfactory.com
- Hoshin Kanri for the Lean Enterprise. Developing Competitive Capabilities and Managing Profit. Thomas L. Jackson
- The Lean Pocket Guide: National Association of Job Shops and Small Manufacturers (NAJS)
- From Good to Great. Jim Collins
- The Tipping Point. How Little Things can make a big Difference. Malcolm Gladwell
- Blink. The Power of Thinking without Thinking. Malcolm Gladwell
- Toyota Production System. Beyond Large Scale Production. Taichii Ohno
- The Toyota Way. Jeffrey Liker
- The Executive Guide to Understanding and Implementing the Baldrige Criteria. Leonard & McGuire
- The Executive Guide to Understanding and Implementing Lean Six Sigma. Meisel, Babb, Marsh, Schlichting

