



DFMA with Current Product: It's never too late

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“The time for action is now. It’s never too late to do something.”

Agenda

- Early Insights
- Rework
- Quoting
- Product Improvement
- Process Improvement
- Conclusion

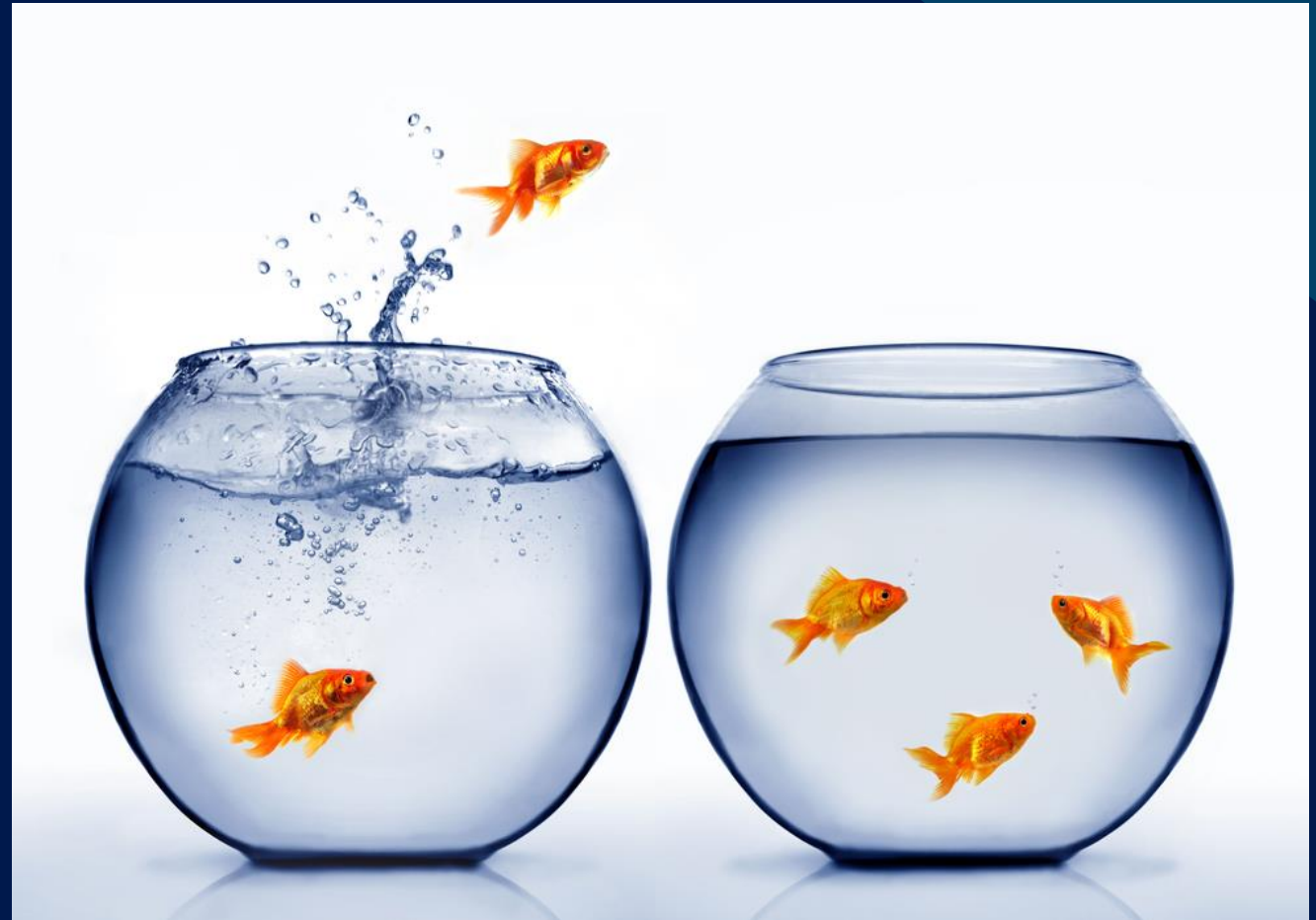
New Product Integration

- Bring voice of manufacturing to New Product Development Teams
- Adoption of DFMA



Faucet Assembly Manufacturing Engineering

- Rework
- Quoting
- Product Improvement
- Process Improvement





Rework



Choices




DFA Results



	Scrap Full Assembly Costs	Rework Costs	Salvage Costs
Assembly Labor Time per unit	0	10 min	4.5 min
Time to Replenish Inventory	4+ weeks	2 weeks	3 weeks
% Cost of product value (including labor for rework)	100%	18%	53%
Notes/Risks:	-Will run short on some parts	- Potential for damage to finished components during rework - Potential for new packaging needed	- Potential for damage to finished components during rework



Rework

-  Labor Estimates
-  Risks
-  Customer/Business Impact



Quoting

Enable Success Through Quoting






	Repeat count	Total count	Minimum items	Minimum part criteria	Process time per entry, s	Process time per product, s	Process cost per product, \$
Motor assy		36	4			261.57	3.42
Base	1	1	1	Base part	4.62	4.62	0.06
Bushing	2	2	0	None	7.86	7.86	0.10
Press fitting	2	2			16.00	16.00	0.21
Motor	1	1	1	Movement	8.10	8.10	0.11
Motor screw	2	2	0	Fastener	18.54	18.54	0.24
Standoff	2	2	0	None	16.14	16.14	0.21
Sensor	1	1	1	Different material	7.44	7.44	0.10
Sensor screw	1	1	0	Fastener	10.51	10.51	0.14
End plate	1	1	0	None	3.54	3.54	0.05
Grommet	1	1	0	None	3.98	3.98	0.05
Feed wire/cable through aperture	1	1			1.60	1.60	0.02
End plate screw	2	2	0	Fastener	18.12	18.12	0.24
Reorientation of assembly	1	1			3.54	3.54	0.05
Cover	1	1			5.54	5.54	0.07
Middle plate	1	1	1	Assembly	4.30	4.30	0.06
Side plate A	1	1	0	None	5.30	5.30	0.07

Additional Benefits





Quoting

-  Accuracy
-  Data Driven Rates
-  Faster RFQ response



Product Improvement

A woman with short grey hair and glasses, wearing a blue blazer over a white top, sits at a wooden desk. She is surrounded by a massive, chaotic pile of papers, forms, and documents that appear to be overflowing from the desk and onto the floor. The scene is framed by a torn paper effect.

Data Driven Decisions




Product Improvement in Action



Assembly Time Reduced	Assembly Efficiency	Per Unit Savings
25.3%	34.9%	27%



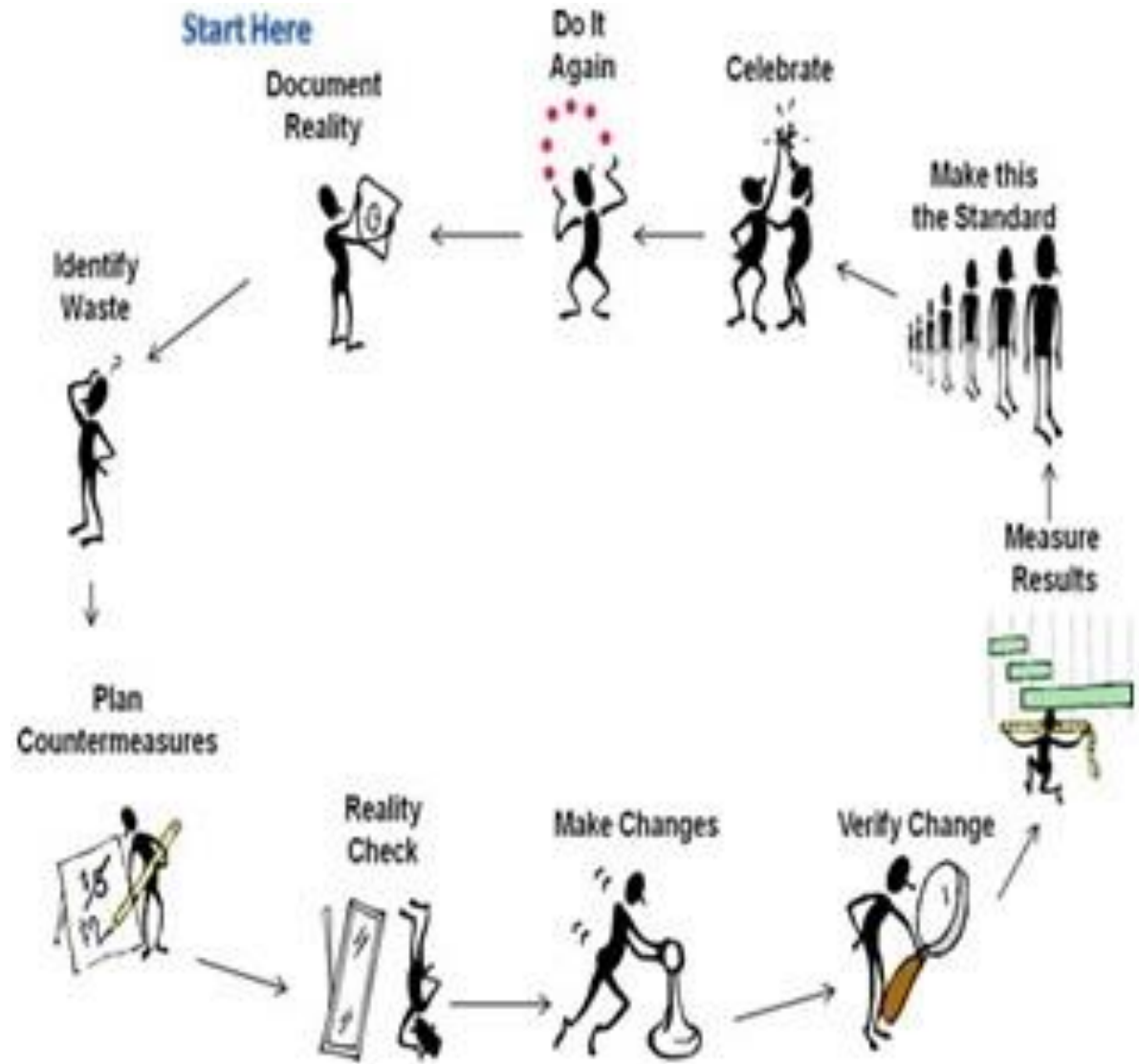
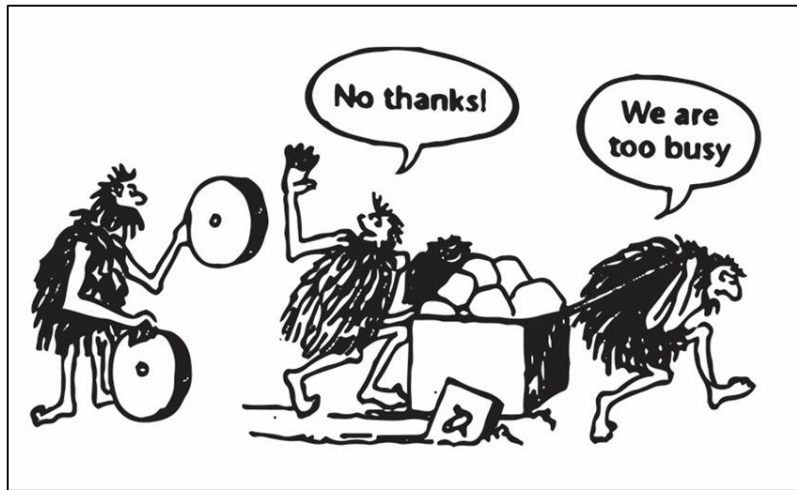
Product Improvement

-  Idea generation
-  Justification
-  Validation






Process Improvement

KAI ZEN
改善
Change for Good



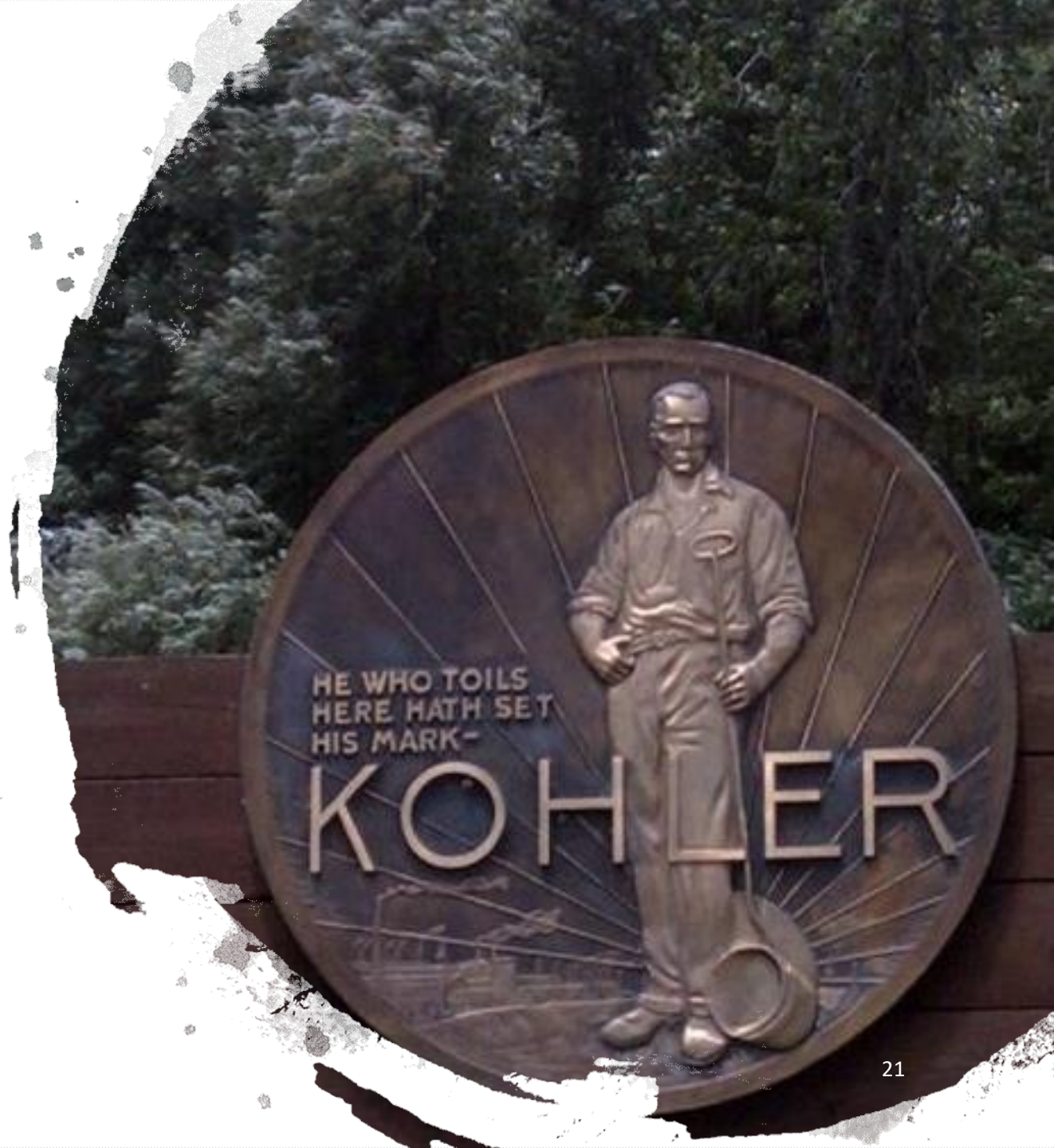


Process Improvement

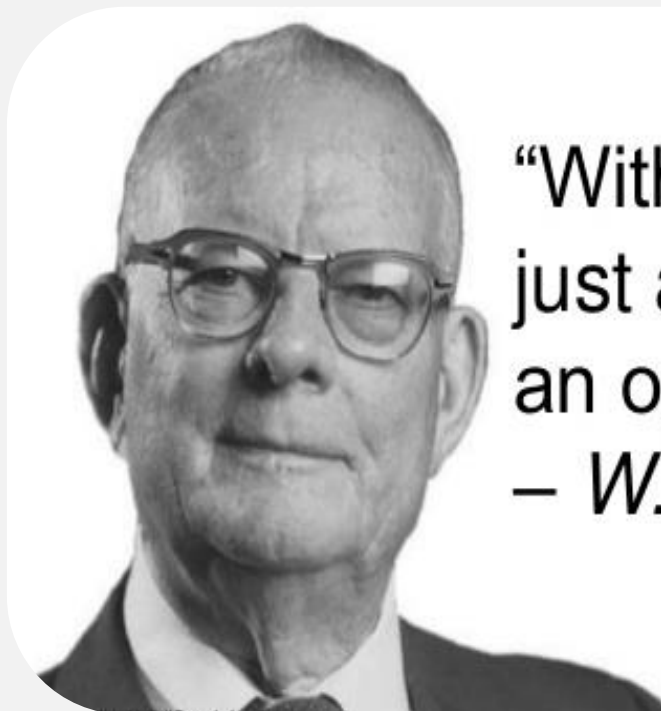
-  Lean
-  Idea Generation
-  Quick Analysis

Summary

- Rework
- Quoting
- Product Improvement
- Process Improvement



Questions?



“Without data you’re just another person with an opinion.”
– *W. Edwards Deming*