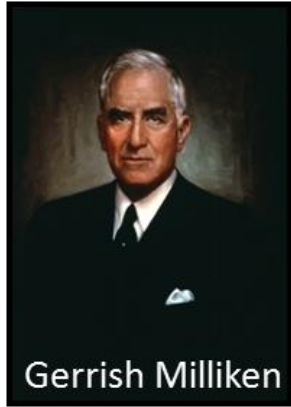
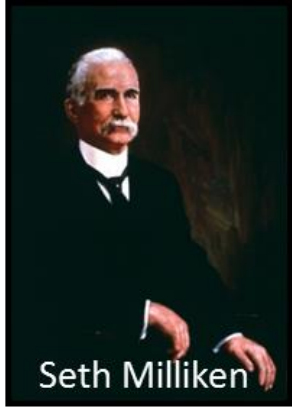


# Performance Solutions by Milliken

*Jordan Workman*  
*Director of NA & EMEA Client Development*

Performance  
Solutions  
by *Milliken*

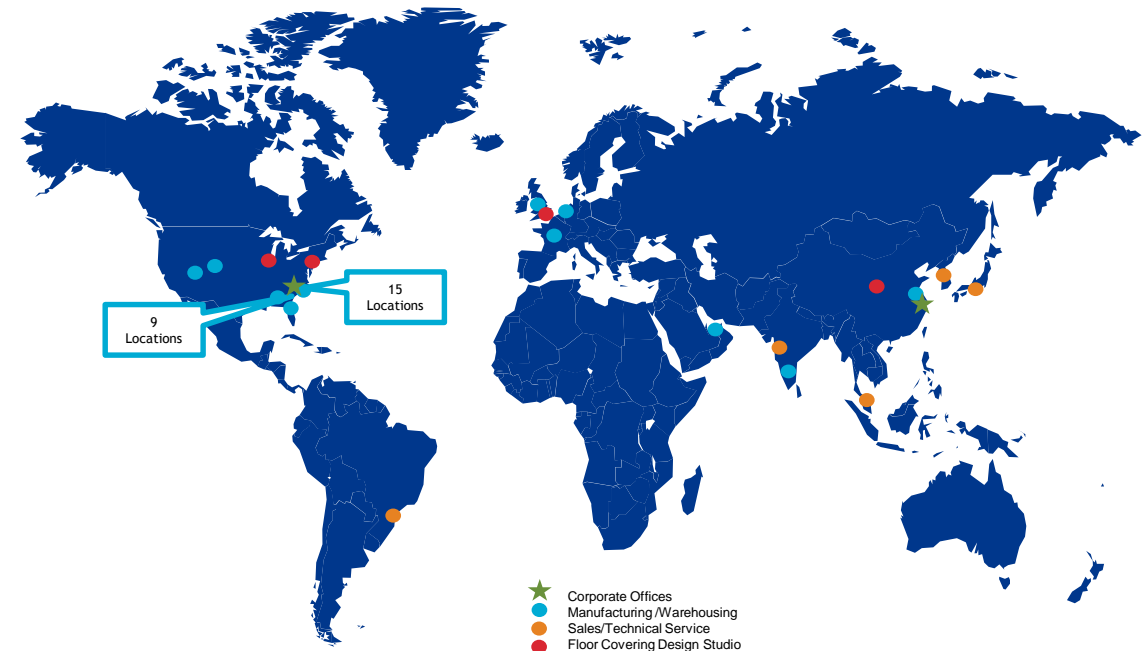
# Milliken & Company's Background



DEERING, MILLIKEN & CO.,  
Proprietors to H. S. Moore & Co., Importers and Agents of  
Dry Goods & Woolens,  
MANUFACTURERS AND DEALERS OF  
Clothing & Cloaks,  
50 AND 60 MIDDLE STREET.  
Agents for Simpson Sewing Machines, for Milner.

- Founded in 1865
- Privately held

- ~\$2.5 Billion in revenue
- ~7,500 associates
- 45 sites in 6 countries
- Operations throughout the Americas, Europe and Asia



Performance  
Solutions  
by Milliken.

# Key Markets

## Specialty Chemicals

Intermediates • Textile Chemicals • Plastic Additives • Specialty Colorants • Carpet Cleaning

## Floor Coverings & Interiors

Commercial • Contract • Residential • Hospitality • Napery & Drapery • Office Fabrics

## Protective & Performance Products

Performance Apparel Fabrics • Workwear Fabrics • Military Fabrics • Airbags • Nonwovens

## Industrial Products

Composites • Belt & Hose Textiles • Inner duct • Tire Cord • Core Materials

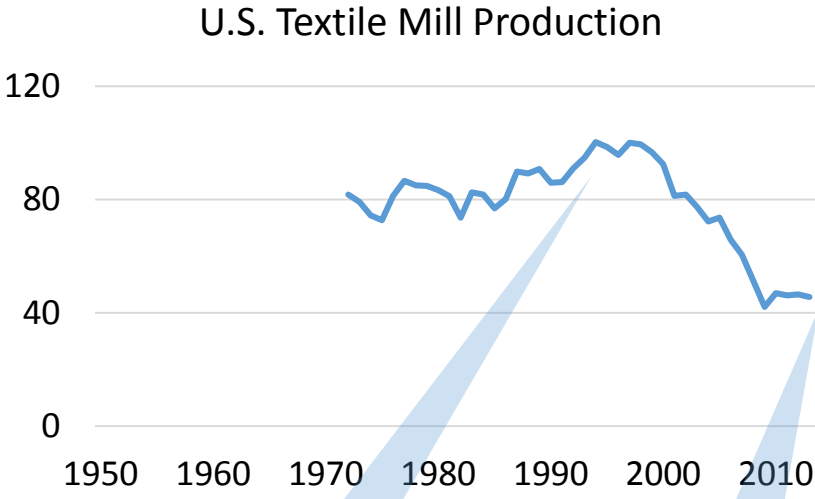
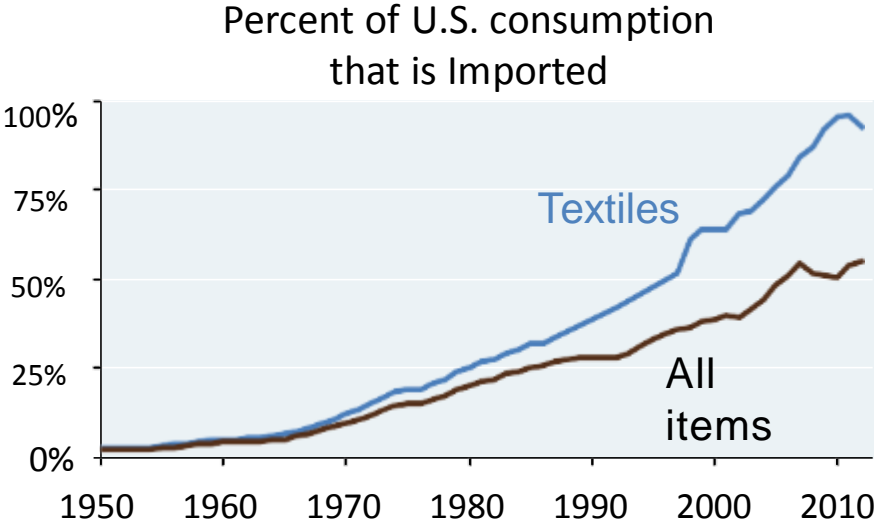
## Performance Solutions

Safety • Performance Excellence • Training



Performance  
Solutions  
by *Milliken*

# Milliken & Company's Reality Performance vs Domestic Textile Players



**Textile companies with > \$1B sales:**

**1995**  
 Milliken  
 Springs  
 Burlington  
 Collins & Aikman  
 Westpoint Stevens  
 Fieldcrest Cannon

**Today**  
 Milliken

# Who we were...

- Privately held, no debt
- Best equipment & data rich
- Value-based
- Hyper-competitive industries
- Command and Control
- Initiative Driven

# Who we were...

- Privately held, no debt
- Best equipment & data rich
- Value-based
- Hyper-competitive industries
- Command and Control
- Initiative Driven
- Award Winning

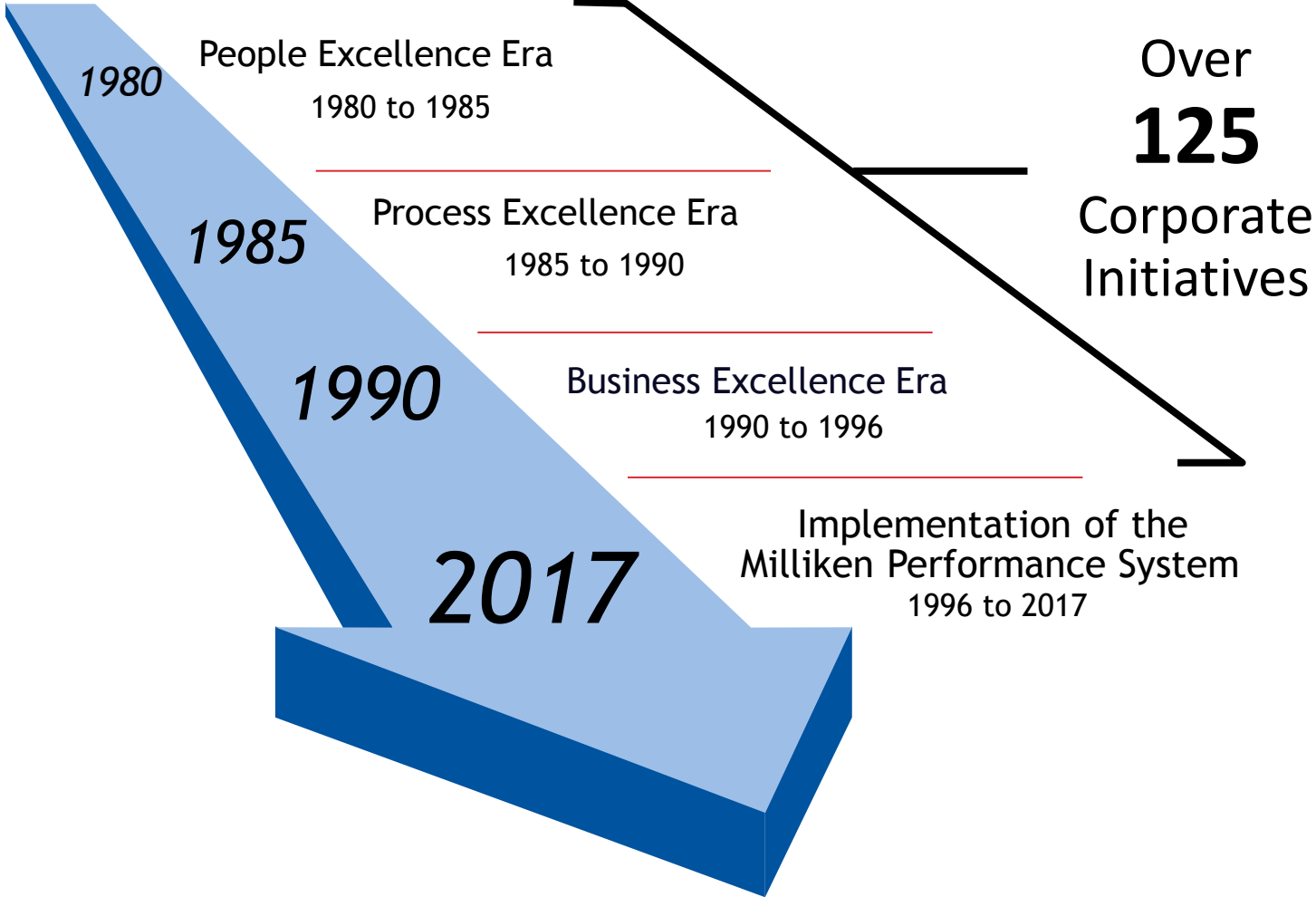


# Life after Awards and Initiatives



*We were not sustaining the gains...*

# Evolution of Operational Excellence





# The Performance System

# Study Missions to Japan



**Benchmarking World-Class Manufacturing Practices**

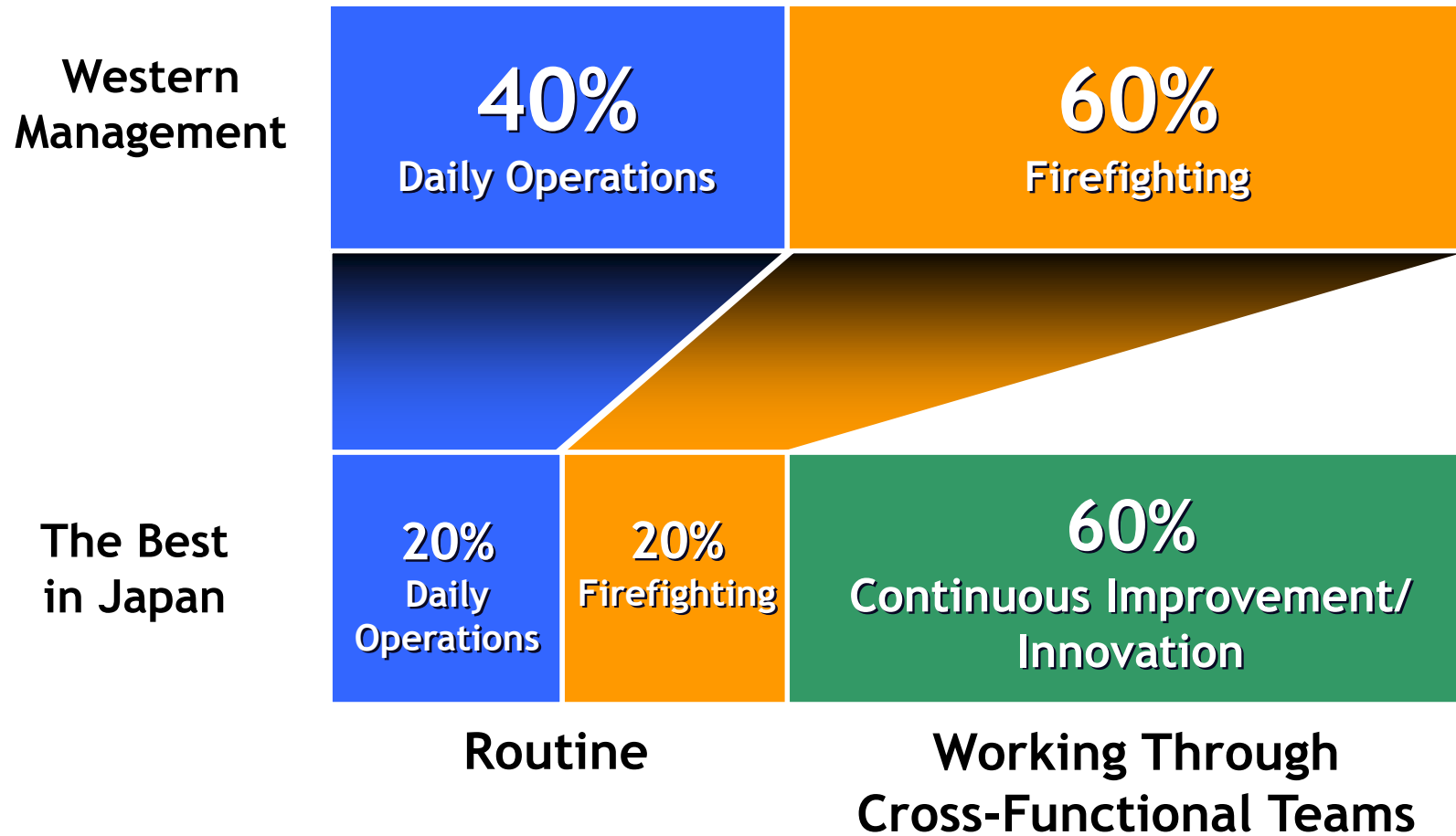
Performance  
Solutions  
*by Milliken.*

# Japan Study Mission Results 1994-1996

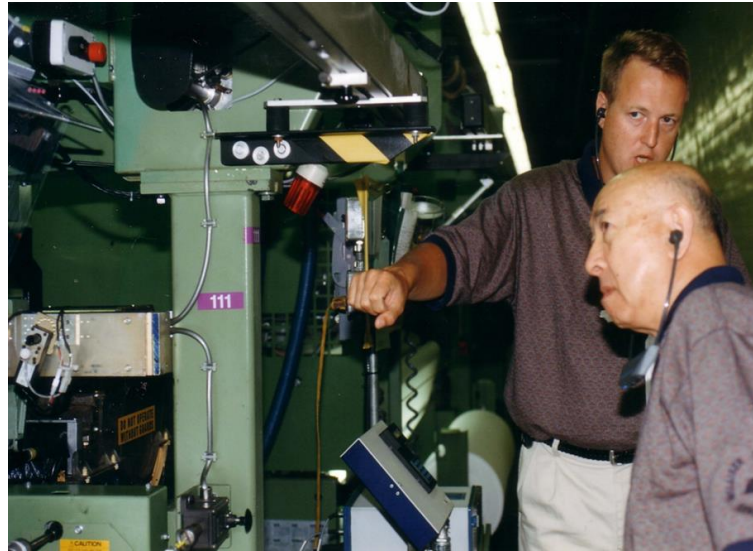
Measurement	# of Companies Reporting	Improvement
Productivity	9	61%
Process Reliability / OEE	8	32%
Breakdowns	9	92%
Defects	7	74%
Claims	6	85%

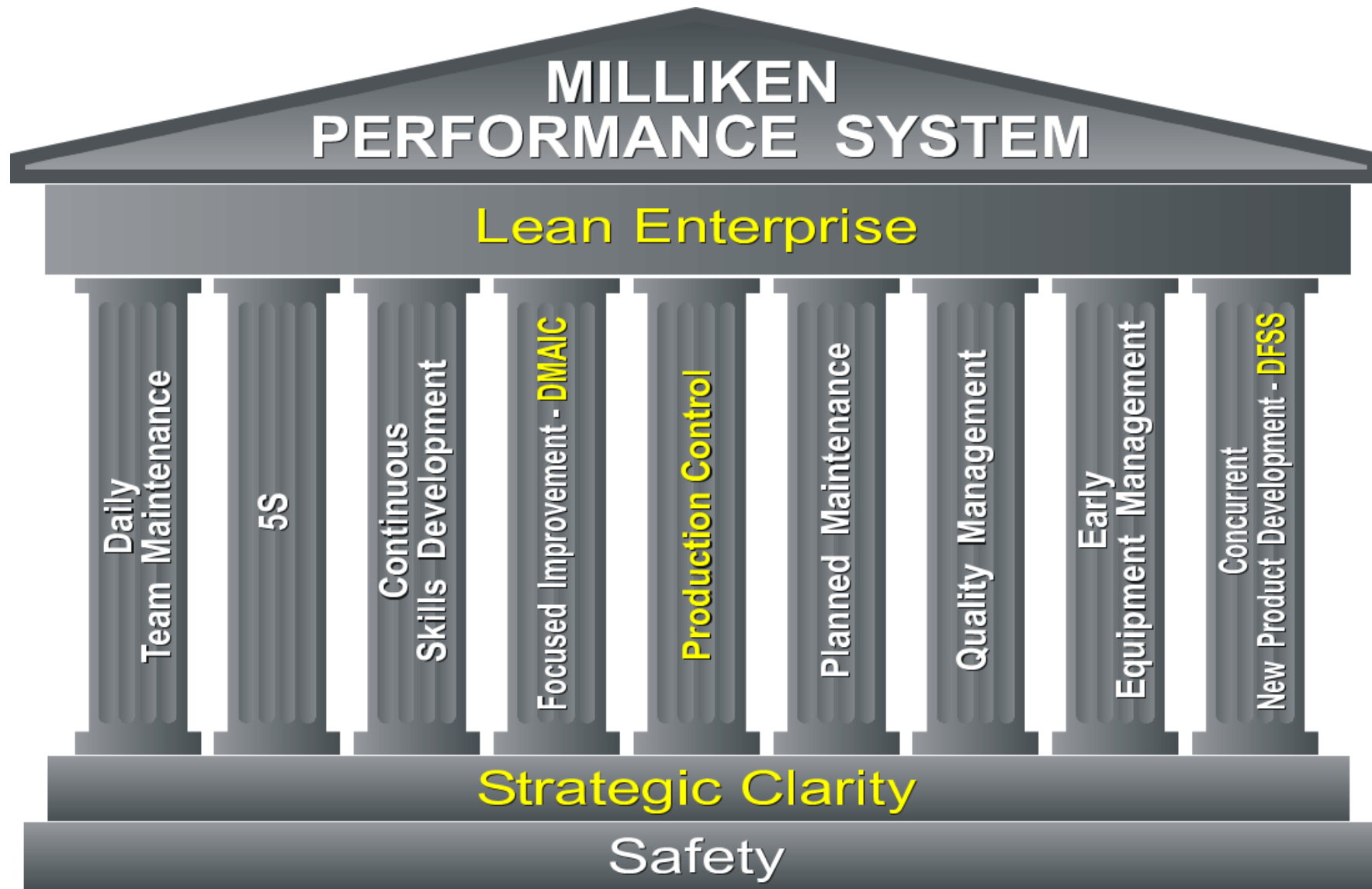
Milliken sent 120 managers on 4 Study Mission Trips

# The Leadership Challenge



# Milliken Hires Japanese Consultants

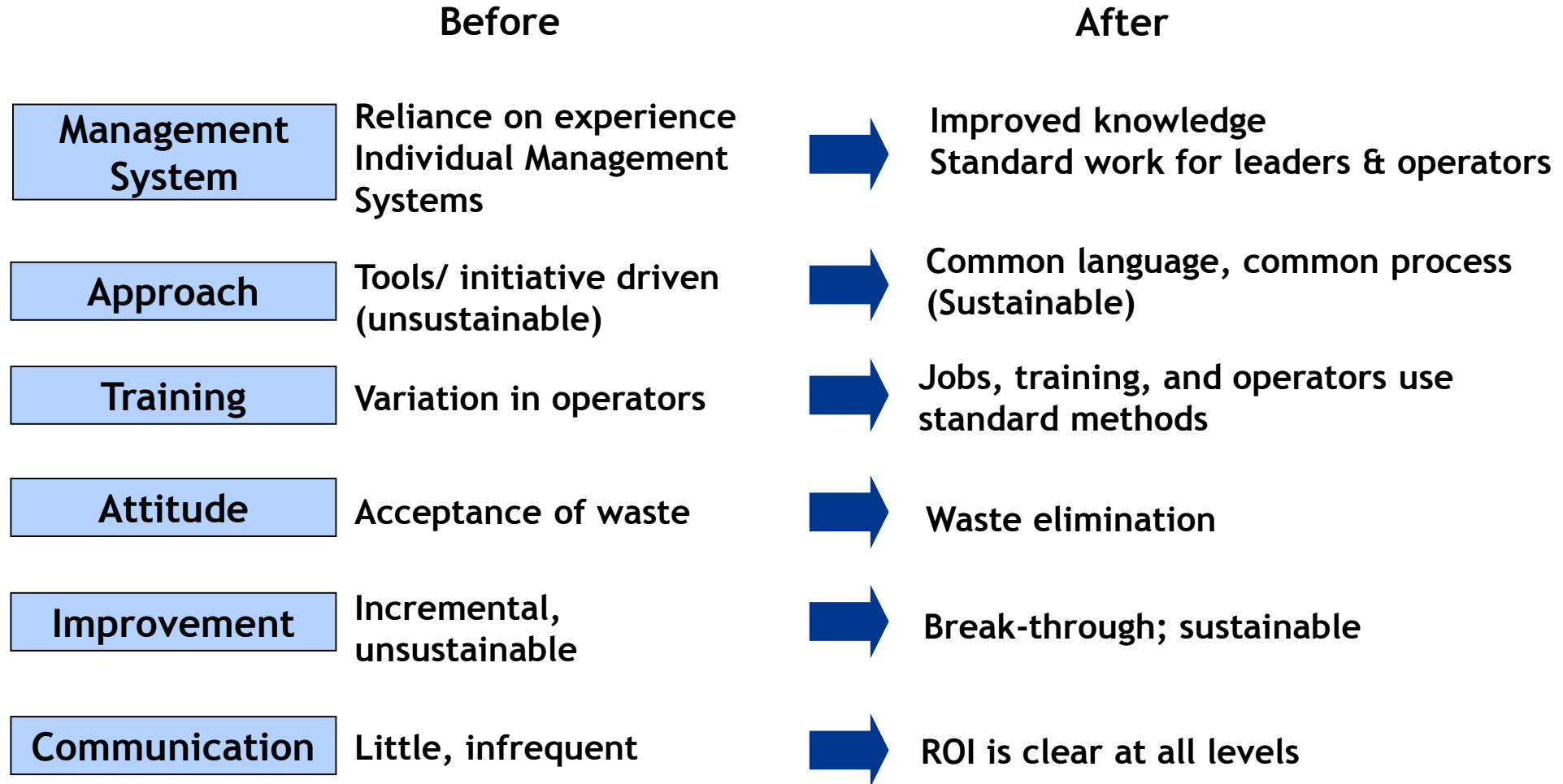




# Performance System results

Measurement	# of Japanese Companies Reporting	Japanese Improvement (Historical)	Milliken Improvement (OE Journey)
Productivity	9	61%	78%
Process Reliability / OEE	8	32%	30%
Breakdowns	9	92%	88%
Defects	7	74%	80%
Safety	—		36%

# Milliken Performance System Transitions





# What are the keys to building a sustainable performance system?



# Key to Implementation - #1

## Embrace Zero Loss Thinking

- Strong benevolent discontent
- Stop measuring success internally
- Celebrate the **RED** as opportunity

# What is a Loss?

**Actual Cost**

Total real dollars spent to manufacture a product.

The difference between actual cost & ideal cost

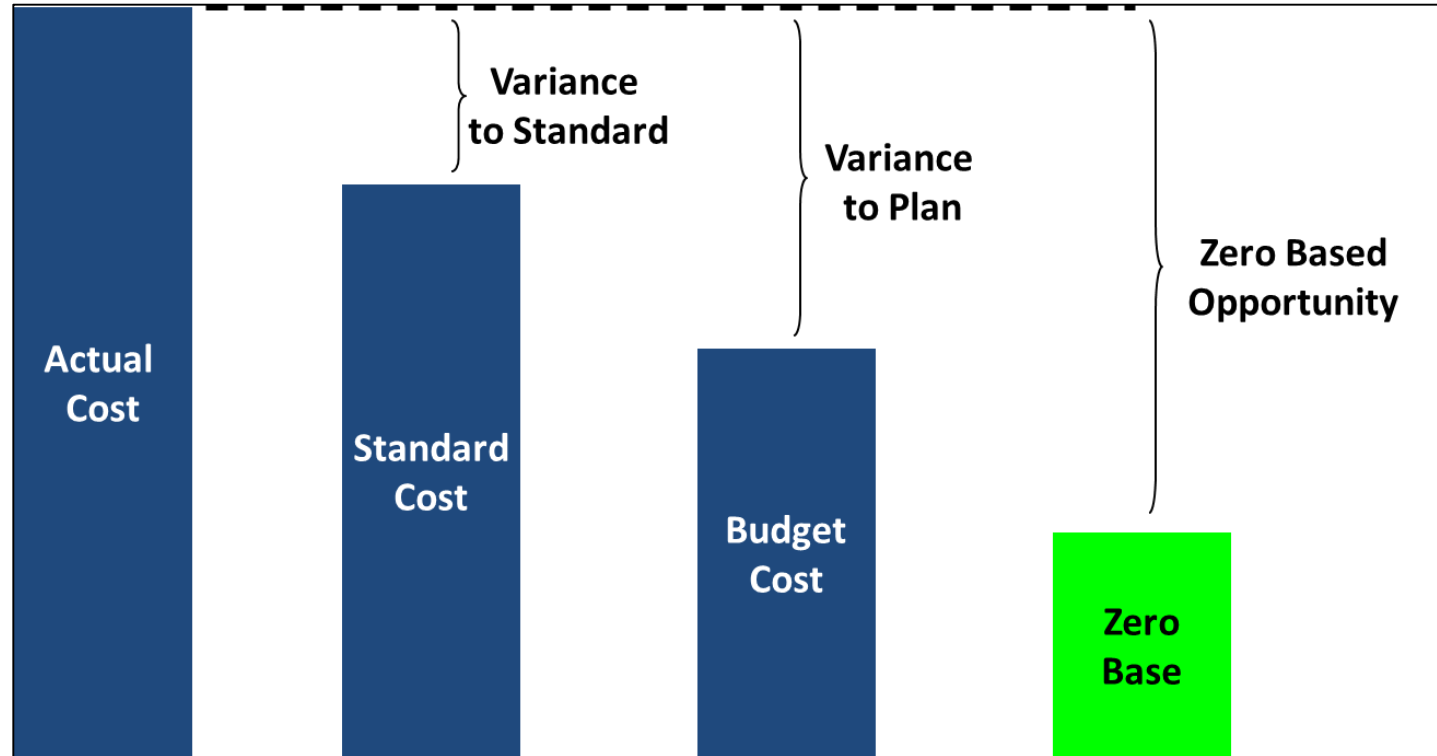


**Ideal Cost**

Absolute minimum cost required to manufacture a product (*theoretical cost*)

***Cost Reduction Opportunity***

# What is Zero Loss Thinking?



# Loss Categories

## JIPM Losses

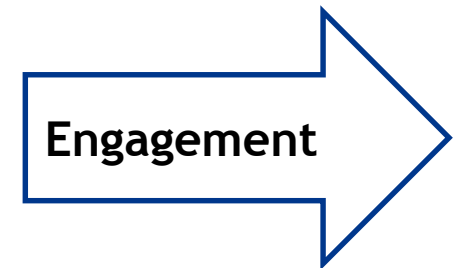
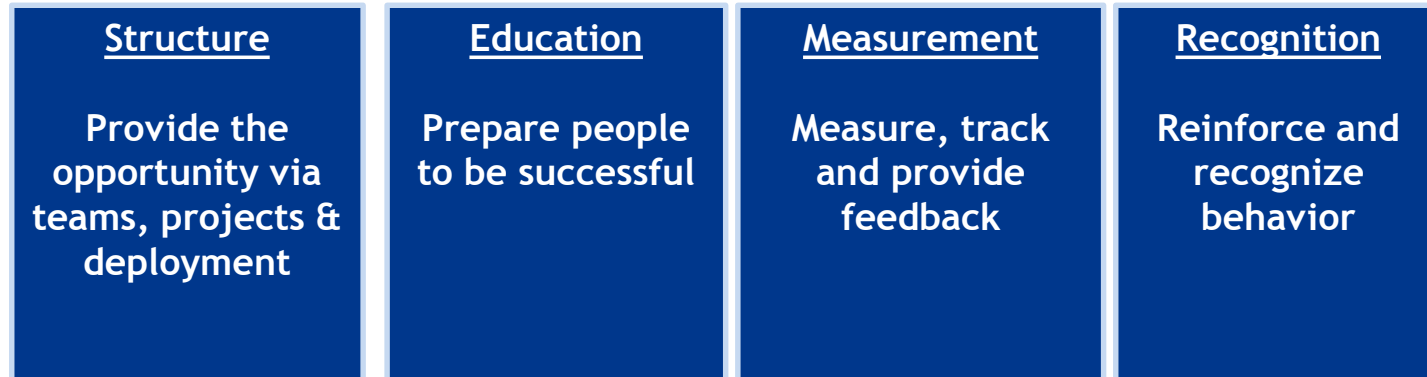
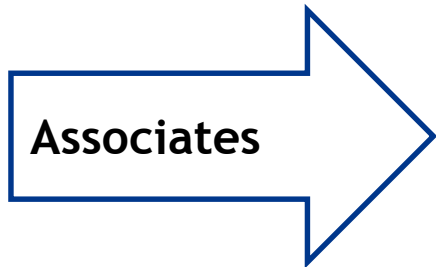
1. Equipment Failure
2. Set-up & Adjustment
3. Cutting Blade Change
4. Start-up
5. Minor Stoppage & Idling
6. Speed
7. Defect & Rework
8. Shutdown
9. Management
10. Operating Motion
11. Line Organization
12. Logistics
13. Measurement & Adjustment
14. Energy
15. Die, Tool & Jig
16. Yield

## Milliken Losses

1. Breakdowns
2. Change Over
3. Start-Up & Shutdown
4. Minor Stops
5. PM & Cleaning Downtime
6. Planning
7. Material Handling
8. Speed Loss
9. Off-Quality
10. Rework
11. Waste
12. Obsolescence
13. Allowances
14. Inventory Variances
15. Training
16. Inspection & Testing
17. Indirect Materials
18. Purchase Price Variance/Claims
19. Over/Under Spending
20. Spending not Captured

# Key to Implementation - #2

## Associate engagement is structural



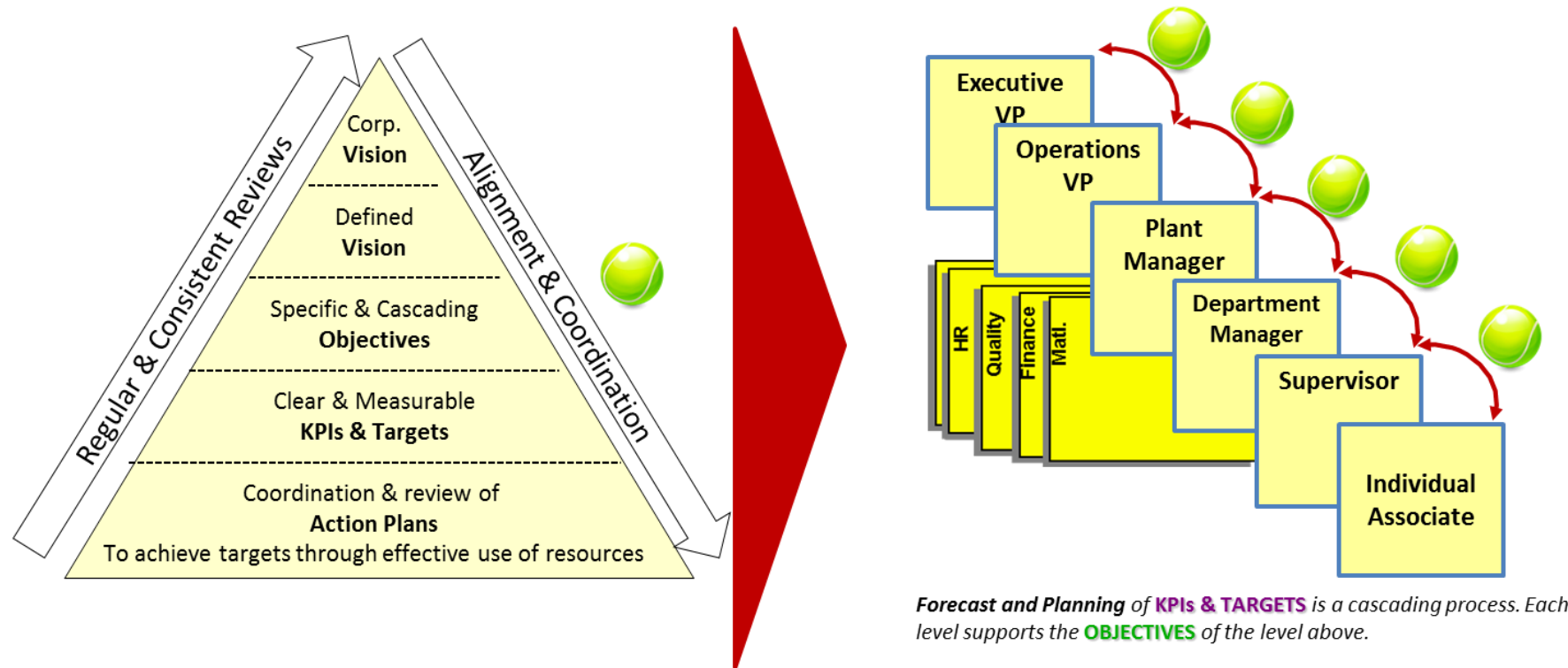
# Key to Implementation - #3

## Become process thinkers

- Facts and data must trump emotions/political power
- Process health monitored more than results
- Results, without showing process, not celebrated
- Trust the process - success begets confidence

# Key to Implementation - #4

## Align and cascade the strategy



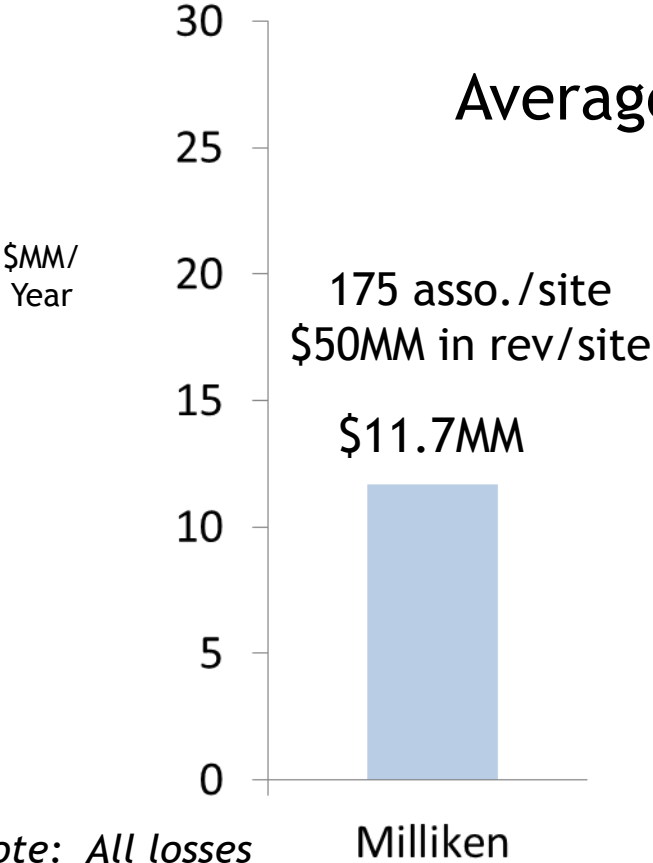


# Key to Implementation - #5

**Translate system success to financial results  
quickly and consistently**

# Loss Analysis

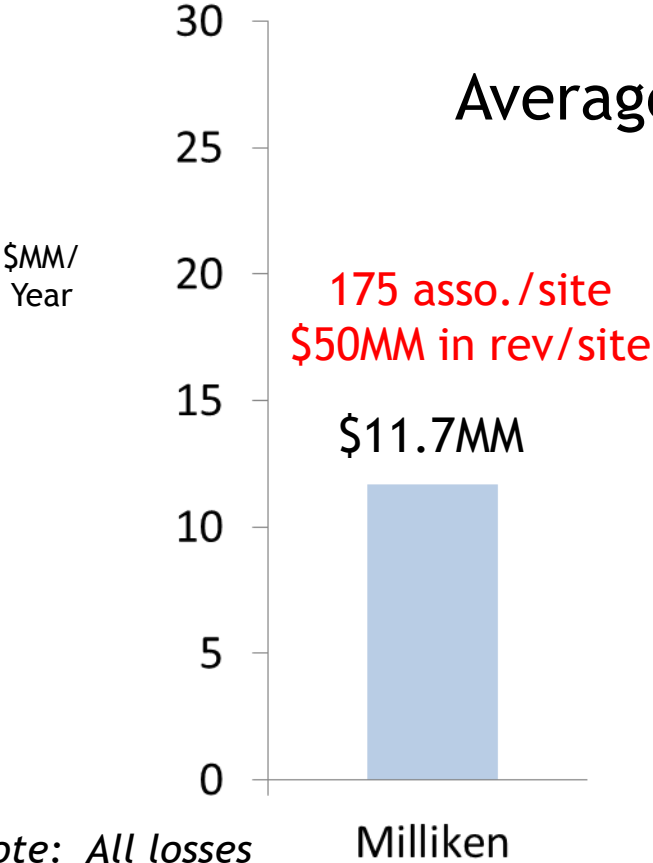
## Milliken & Company Average loss landscape per plant \$MM/year



*Note: All losses are full variable*

# Loss Analysis

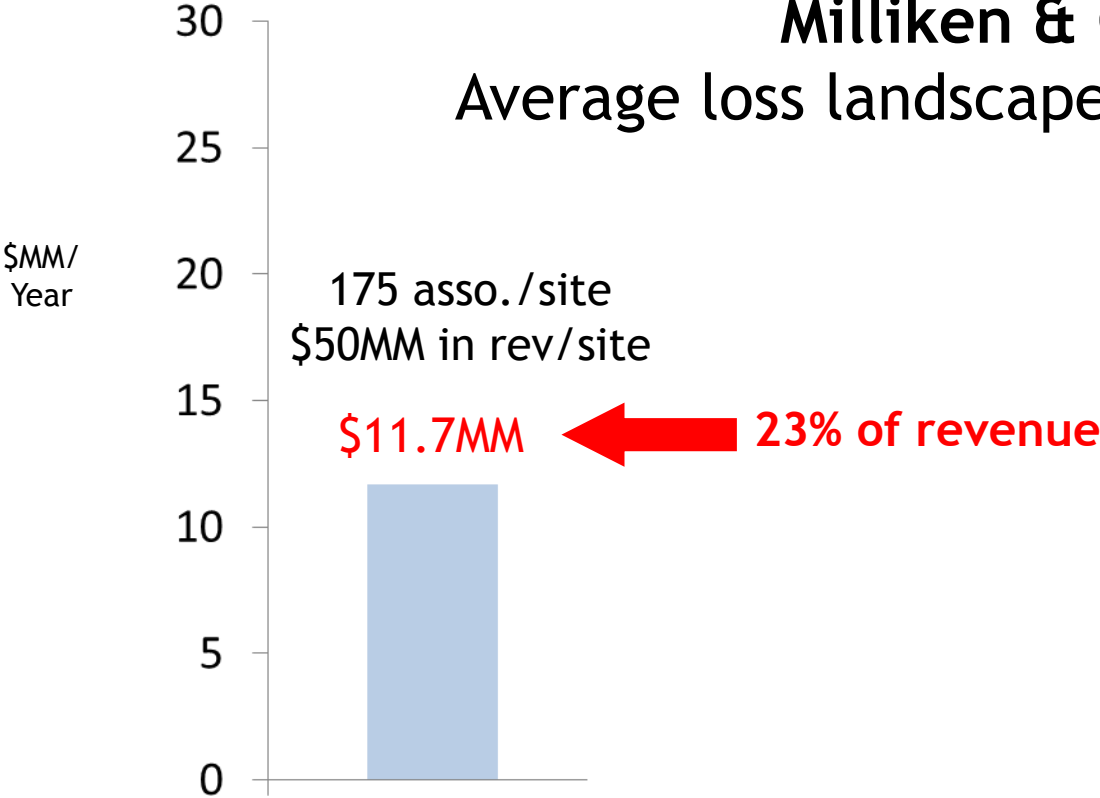
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# Loss Analysis

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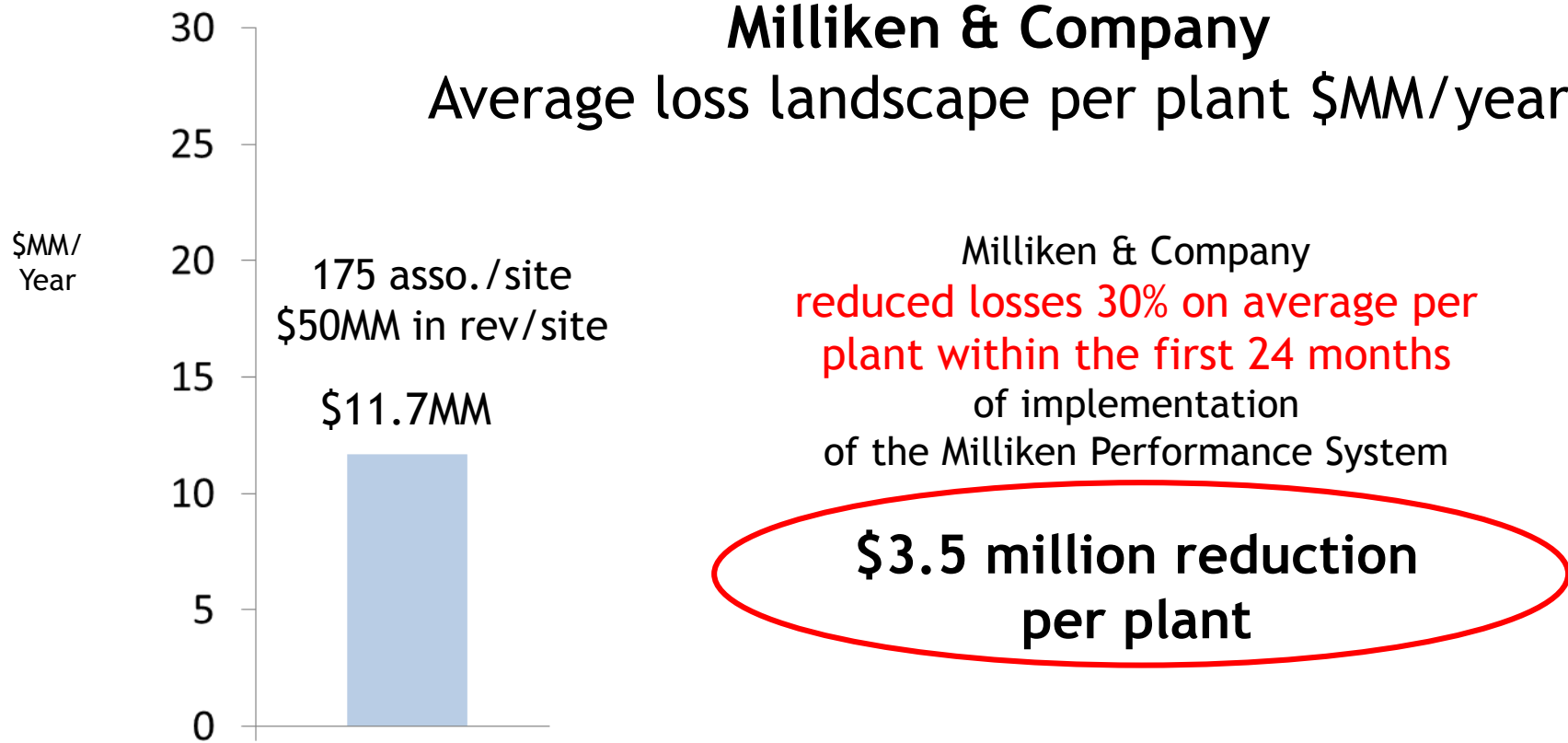


*Note: All losses are full variable*

Milliken

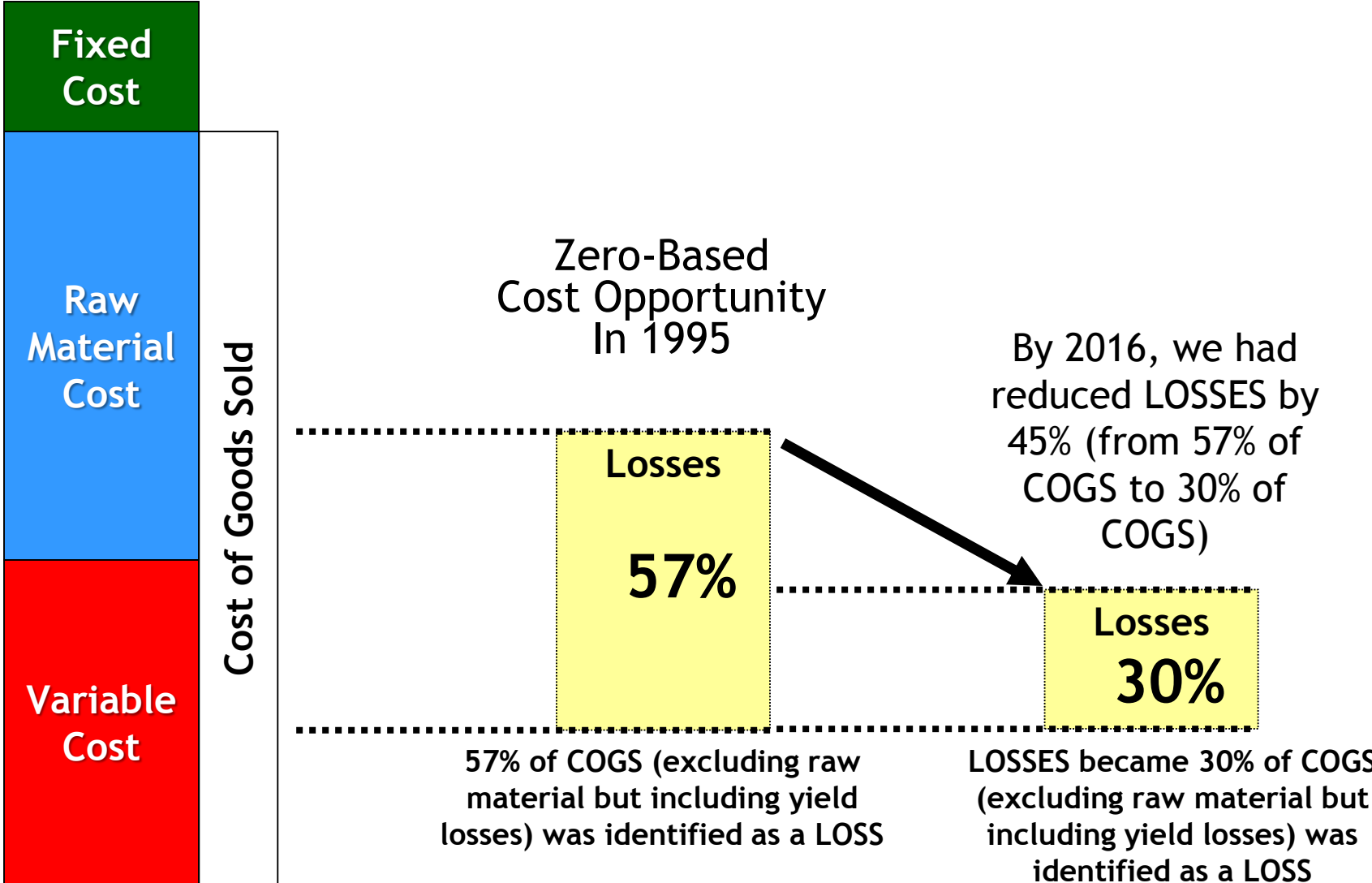
# Loss Analysis

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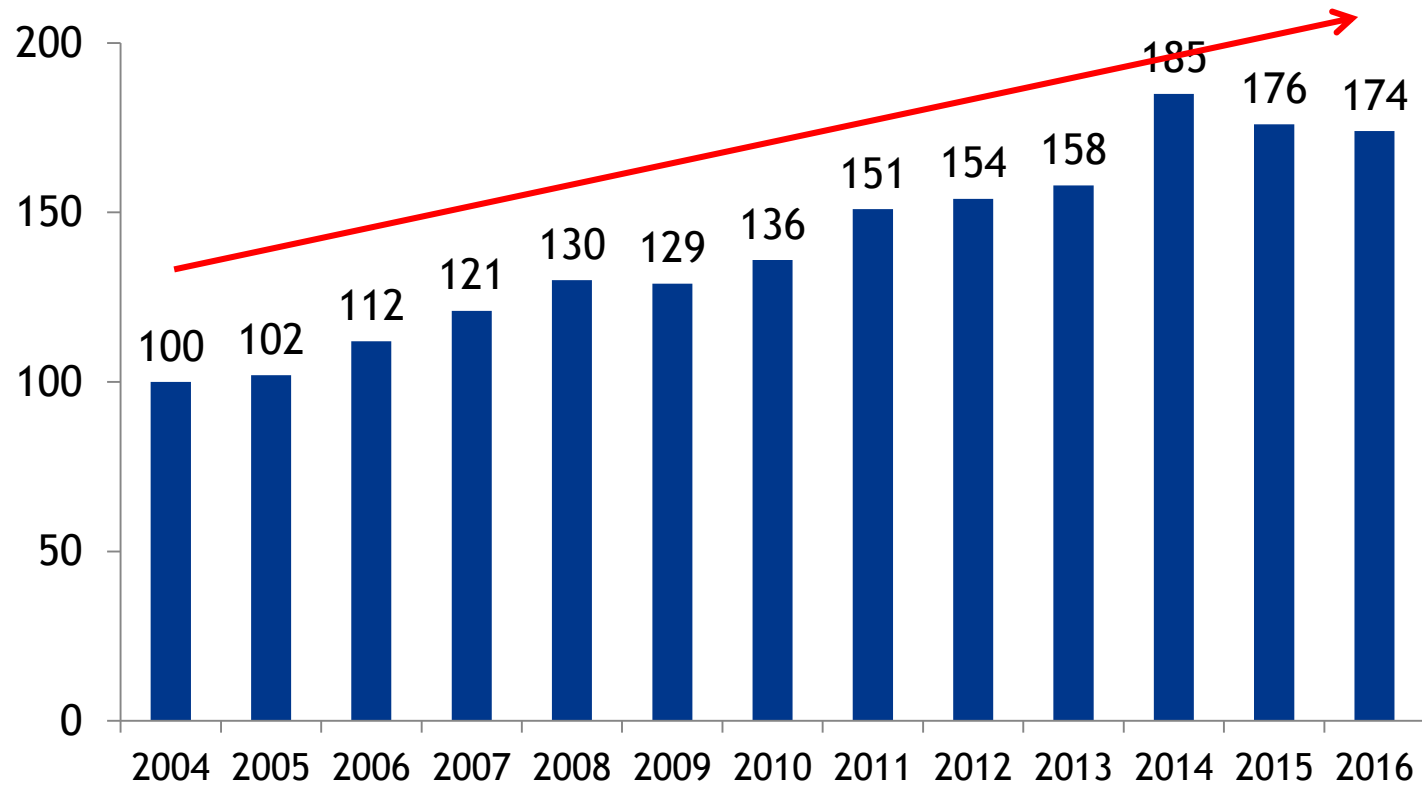
# Loss Analysis



# Milliken Performance System: Hard Benefits

## Production Labor Productivity

Revenue Per Production Associate (Indexed to 2004 = 100)

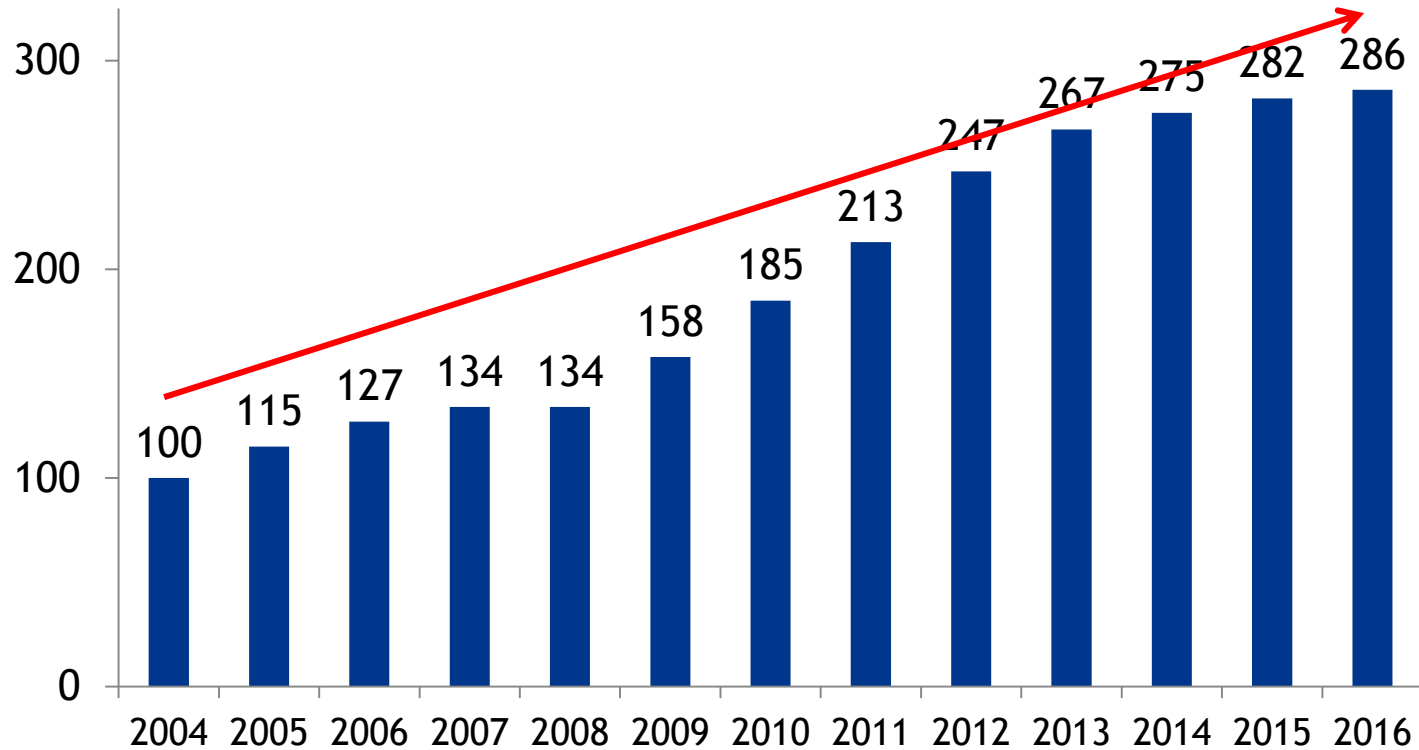


***From 2004 to 2016: 5% Annual Productivity Improvement***

# Milliken Performance System: Hard Benefits

## Manufacturing Management Productivity

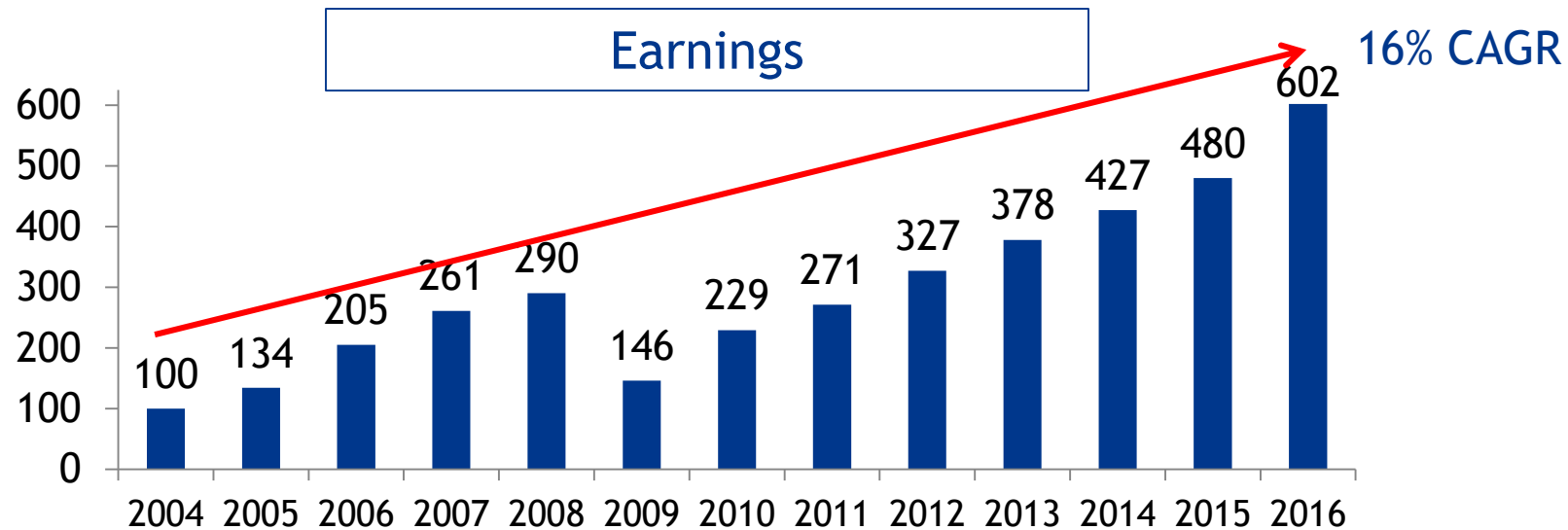
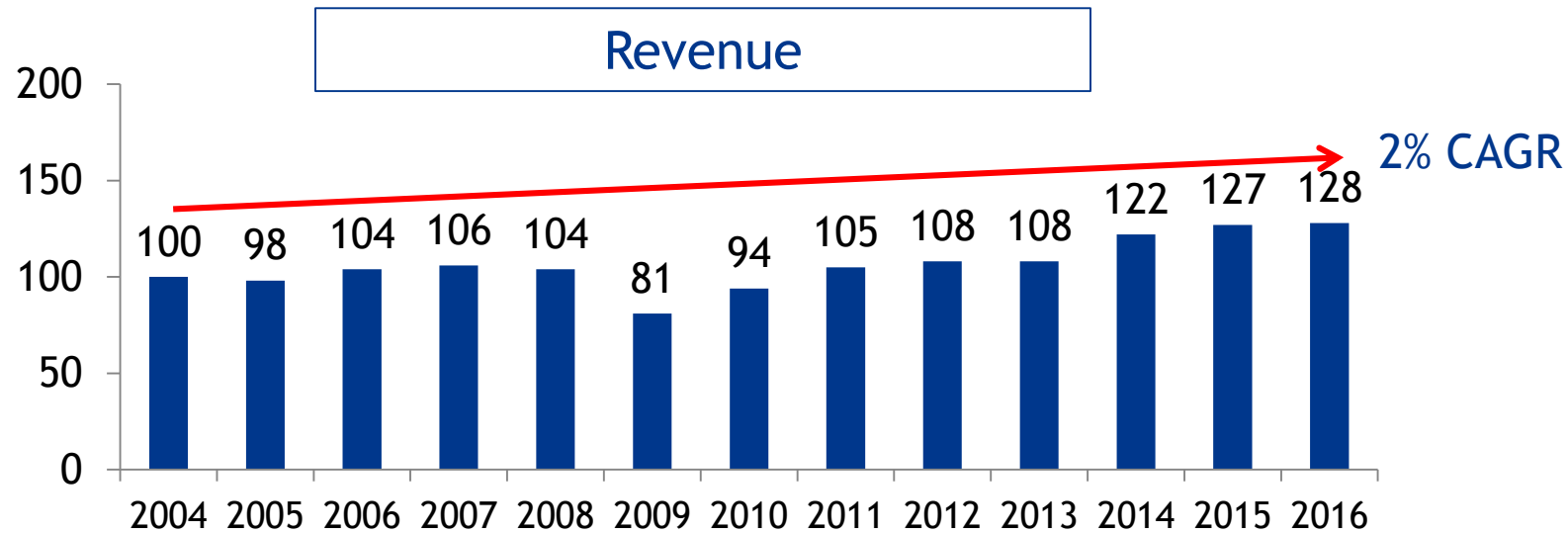
Revenue Per Manufacturing Management Associate (Indexed to 2004 = 100)



***From 2004 to 2016: 9% Annual Productivity Improvement***



# Milliken Revenue and Earnings Since 2004

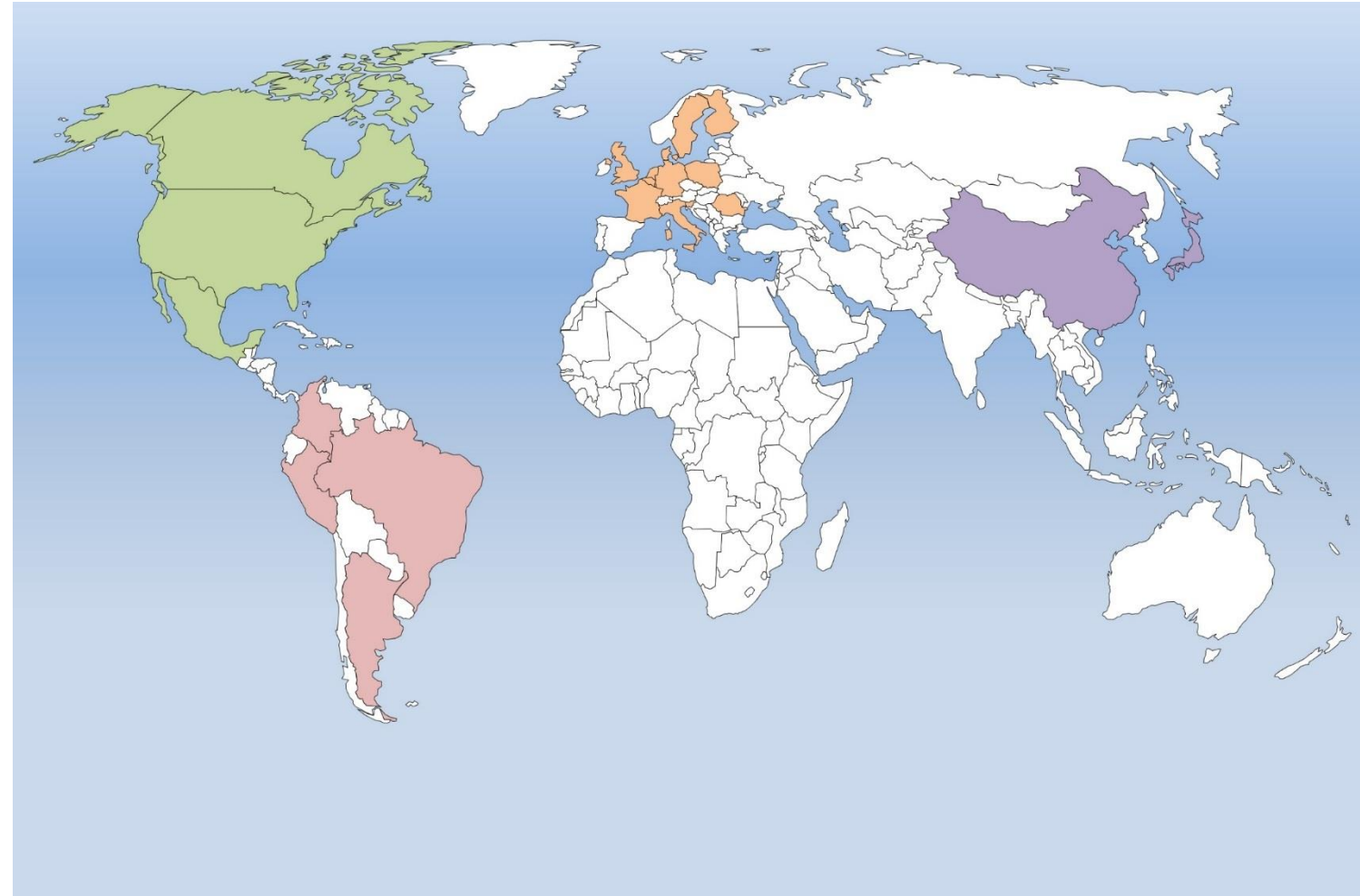


# Performance Solutions by Milliken

**400 + Operations**  
**27 Countries**

## Industries

- Food & Beverage
- Glass
- Steel Manufacturing
- Agribusiness
- Packaging
- Paper Manufacturing and Converting
- Construction
- Chemicals
- Non-wovens
- Consumer Packaged Goods



Performance  
Solutions  
by Milliken