



Abbott

Turning Science Into Caring

Michael Schickler
Continuous Improvement Manager
Abbott
Global Pharmaceutical Products Division
Lake County Operations

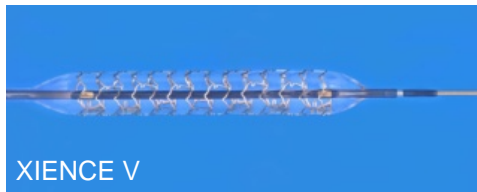


Abbott at a Glance

- Market-leading
pharmaceuticals
- Advanced
medical products
- Trusted
nutritional products

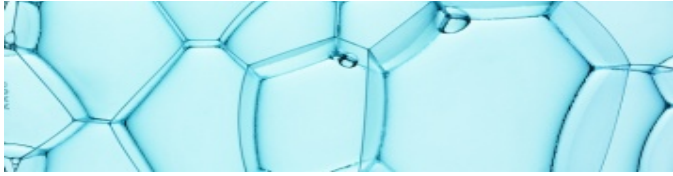


Biaxin (clarithromycin)



XIENCE V



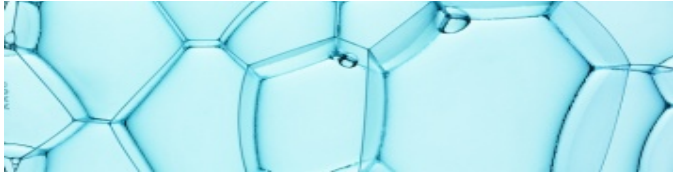


Abbott at a Glance

■ Serving Global Needs

- Corporate Headquarters
 - North suburban Chicago, Illinois, U.S.A.
- Global reach
 - 100+ facilities
 - 130+ countries
- ~ 90,000 employees
- 2010 Sales \$35.2B





Lake County Plant Operations

- Located in Lake County, IL
- 350 employees
- 60 different pharmaceutical products
- 3 shifts, 7 days





Lake County Plant Operations

Operational Effectiveness through Lean Sigma

Manufacturing

- **Granulation**
- **Blending**
- **Particle Coating**
- **Compressing**
- **Encapsulation**
- **Tablet/Capsule Coating**
- **Tablet Printing**
- **Overencapsulation (clinical)**
- **Semi-Solid**
- **Liquid**

Finishing

- **Packaging Lines**
 - Bottles
 - Blisters
 - Syringes



Operational Strategies for Lean Sigma Manufacturing

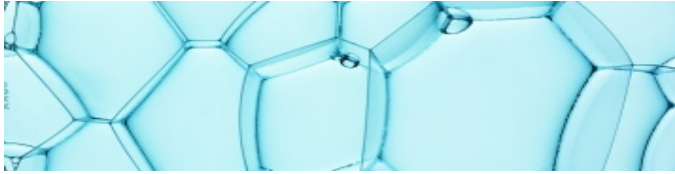




Continuous Improvement

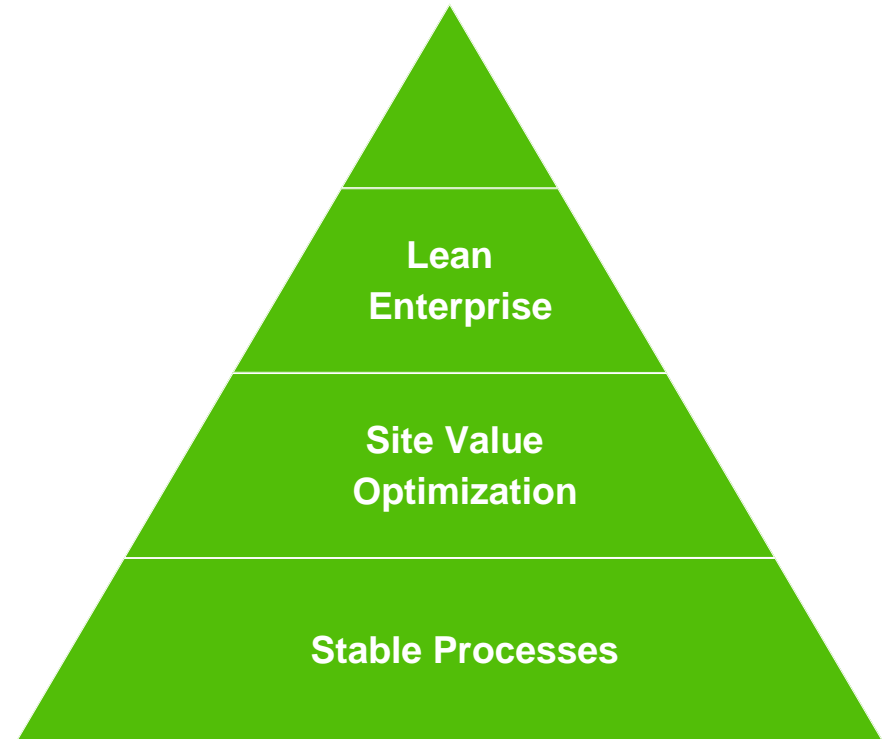
- Continuous improvement is a journey
- You'll need some tools, a map, and a destination
- Beware of too many tools, applied in haphazard fashion
- Sustain results through management commitment





Continuous Improvement Journey

- Applying the appropriate tool at the right time
- Stable processes are enabled by:
 - Process Mapping
 - Standard Work
 - Root Cause Problem Solving





Business Process Mapping

- Why map
 - Visually describe process steps
 - Identify clear performance indicators
- Types of process maps:
 - Flow Chart
 - Decision Tree
 - Value Stream Map



It's all about connecting the dots



Business Process Mapping

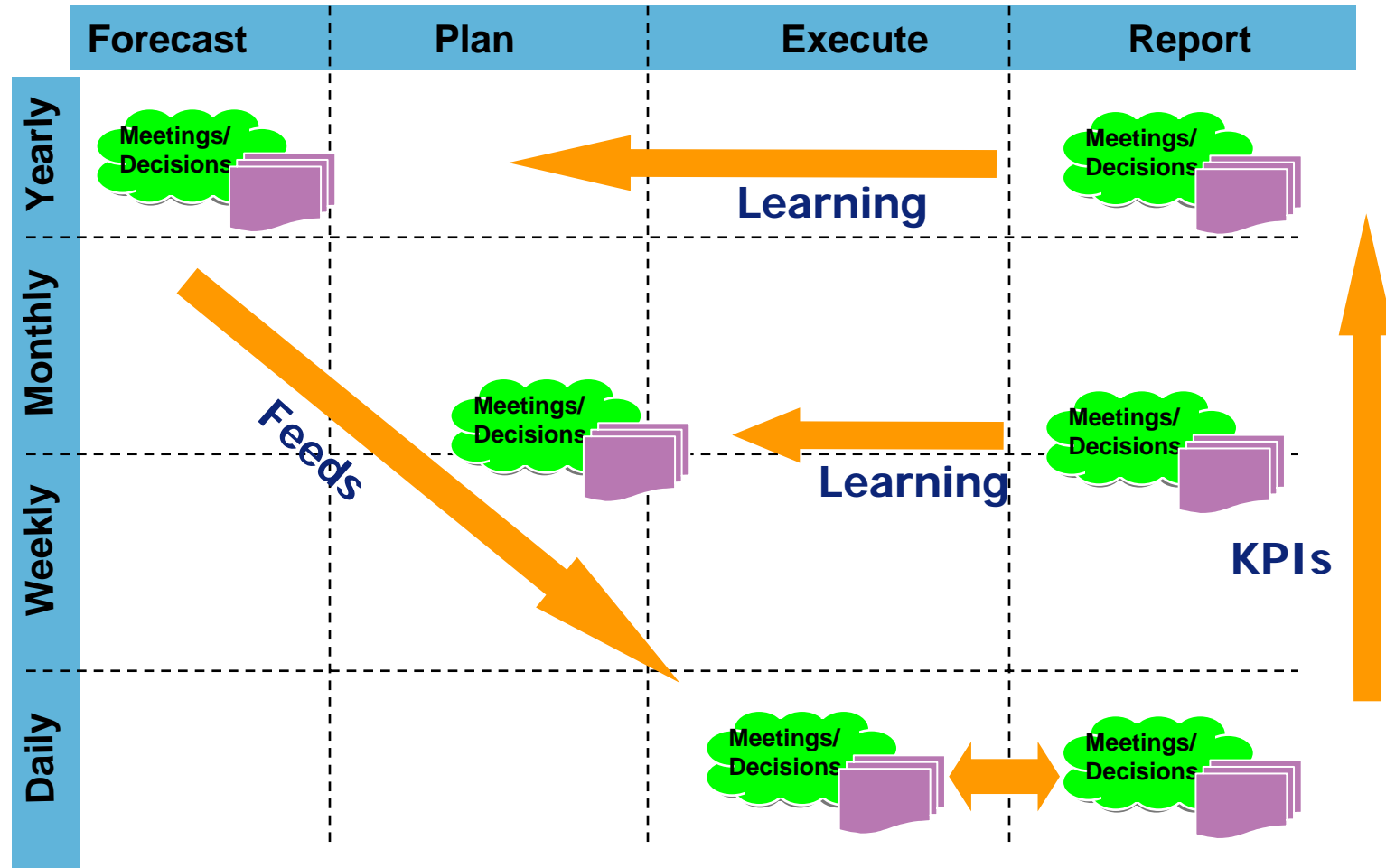
■ Benefits

- See the flow of information
- Identify gaps
- Eliminate redundancy
- Create transparency
- Generate consistency



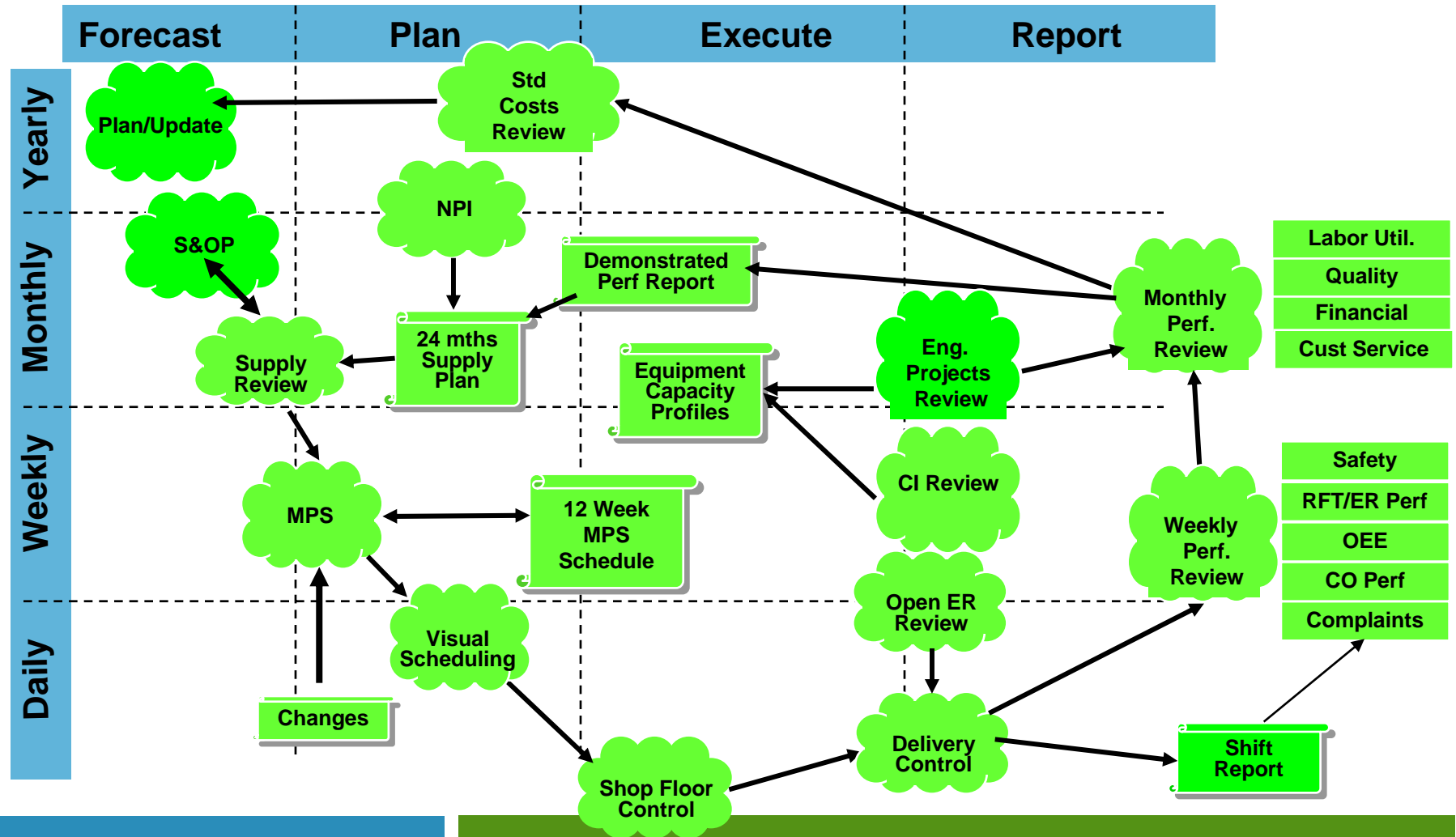


Business Process Mapping





Business Process Mapping





Monthly Performance Review

Owner: Manufacturing Director

Date: 10th Business Day of Month

Duration: 90 minutes

Purpose: Review previous month financial and operational performance. Review progress against key goals.

Audience: Site Director, Manufacturing Unit Managers, Plant Quality Managers, Technical Operations Managers, Finance Manager, Materials Management Director, Engineering Manager, Plant Business Excellence Manager

Inputs: Financial P&L by business unit, Quality Metrics, Customer Service Metrics, Safety Metrics, Key Project Updates

Outputs: Action Items from meeting, adjustments to plan



Standard Agenda

- Cost
- Customer Service
- Quality
- Safety
- Environmental
- Key Projects Reviews

Standard work for managers



Standard Work

- Standard Work is a formally defined and documented process to produce at a specified pace
- Standard work enables a stable platform from which continuous improvement can begin
- Examples include:
 - Company procedures
 - Checklists
 - Flowcharts
 - Work instructions





Standard Work

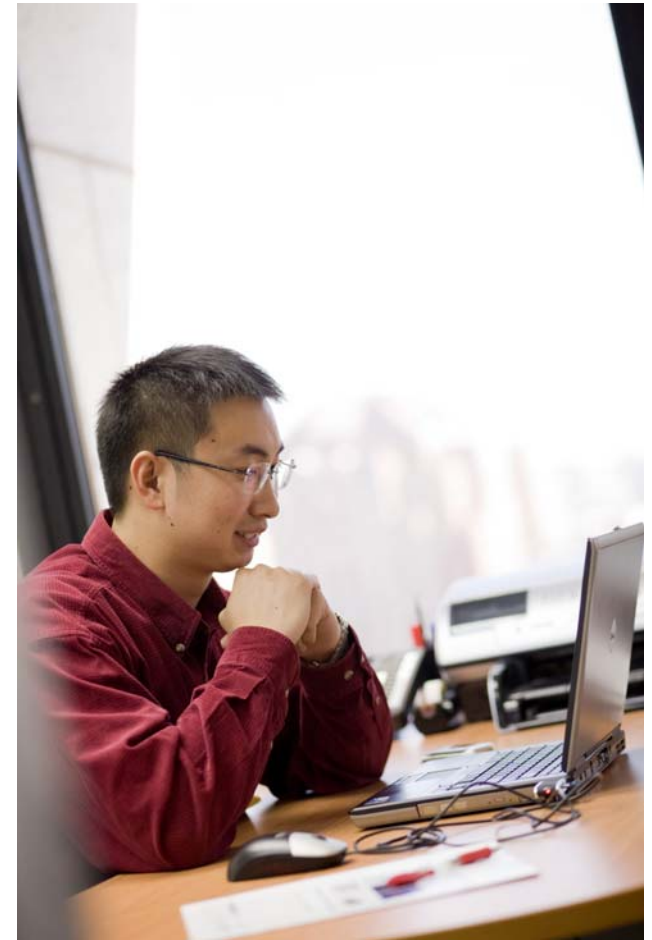
- **Symptoms of a healthy environment**
 - 12 week firm delivery schedule
 - Customer service above 97%
 - 24 month rough cut capacity planning profile - including new products, engineering, maintenance, and changeover times
 - Optimized direct labor utilization

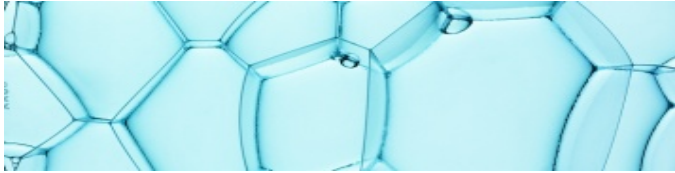




Standard Work for Managers

- **Role of Master Production Scheduler**
 - Integration between Marketing, Distribution and Production
 - Regulate supply to meet demand
 - Maintain optimal production schedule
 - Manage change (time fence rules)
- **Deliverables**
 - 24 month Supply Plan
 - Master Production Schedule
 - Rough Cut Capacity
 - Inventory Position
 - Performance Metrics





Standard Work

Overall Sales and Operations Plan timetable

Business	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Marketing S&OP		Green	Green	Green	Green	Green	Green														
Planning S&OP									Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue					
Manufacturing S&OP													Red	Red	Red						
Division S&OP													Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Marketing

- Day 2: Create baseline forecast
- Day 3: Update proposed forecast
- Day 5: Financial reconciliation
- Day 7: Marketing S&OP meeting

Planning

- Day 8: Update master arrival schedule
- Day 9: Perform adjustments
- Day 10: Financial Reconciliation
- Day 13: Manufacturing changes incorporated
- Day 14: Planning S&OP meeting
- Day 16: Confirm final with Marketing

Manufacturing

- Day 13: Update master production schedule and run capacity analysis
- Day 14: Financial Reconciliation
- Day 15: Manufacturing S&OP, commit with Planning

Division

- Day 13/14: Division new product Review
- Division S&OP will be conducted during the last full week of the month according to the following schedule:
- Monday: Area Demand Review
- Tuesday: Division Supply Review
- Wednesday: Financial Consolidation
- Friday: Executive S&OP meeting

Standard Work

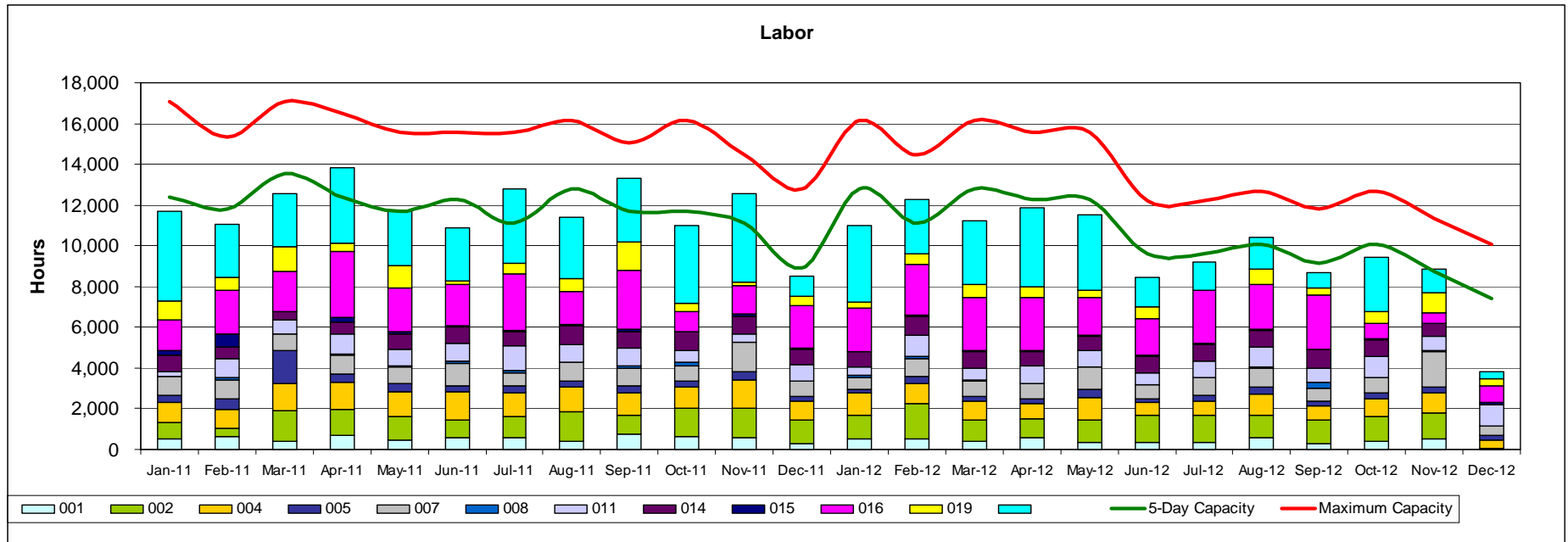
Current Master Production Scheduling Process

Monday	Tuesday	Wednesday	Thursday	Friday
Daily Standing MM Meeting				
Daily Shop Floor Control Meeting				
Daily Performance Meeting				
Weekly Pre-MPS meeting with Engineering	Weekly inventory review with Global Supply Planning	Weekly customer teleconference	MPS deck preparation	Define detailed schedule for week 2
		Detailed capacity balancing	MPS Meeting	Lock week 2 delivery dates

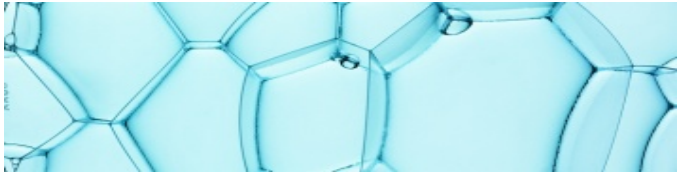
- Communication is vital to success
- Partners should understand and participate

Standard Work

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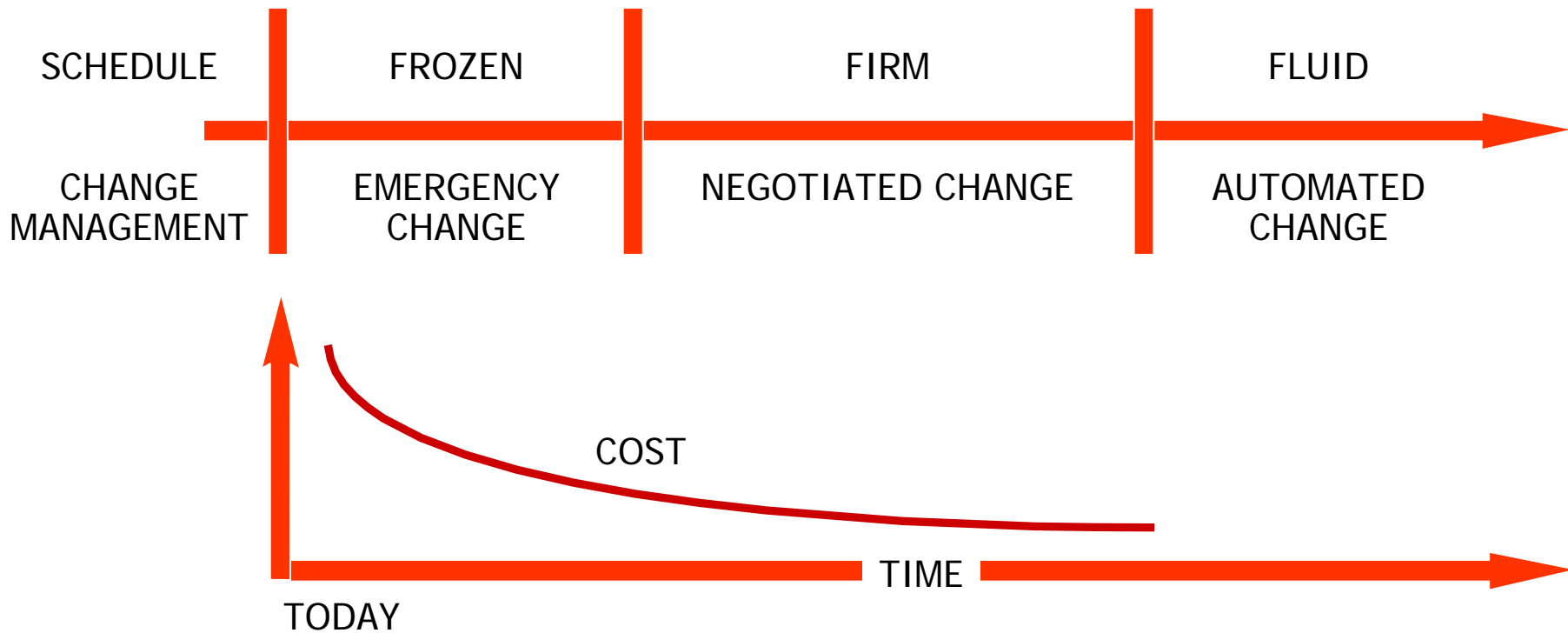


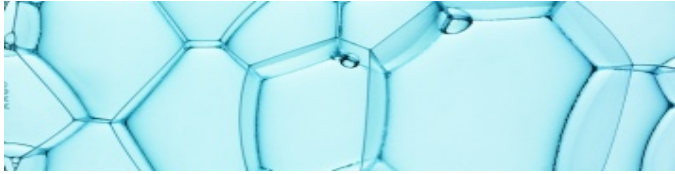
- Capacity planning assumptions transparent to all stakeholders
- Impact of change is evident
- Review and meetings are formalized



Standard Work

Master Schedule Change Management





Continuous Improvement Journey

- Standard work enables stable processes
- Foundation for improvement
 - 10% improvement in customer service
 - 42% improvement in labor efficiency
 - 40% reduction in change over
 - 60% reduction in safety incidents



Routine things happen routinely



Root Cause Problem Solving

- The challenge in root cause problem solving is to distinguish between problem symptoms and problem causes.
- Defining a problem in terms of its symptoms obscures the real cause and leads to symptomatic solutions that often produce short term results but fail to correct the basic condition.

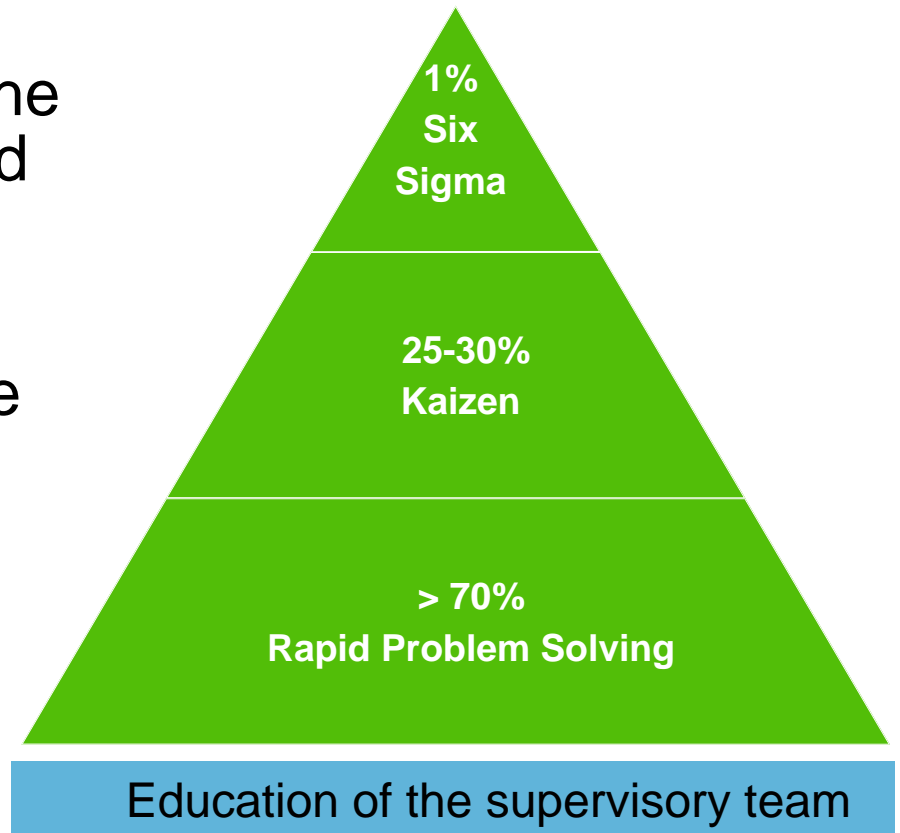




Root Cause Problem Solving

- There are numerous problem solving strategies
- Success comes from pairing the approach with the problem and ensuring the proper team is empowered to act
- Select a few tools and become very proficient
- Reinforce desired behaviors through management participation

Employee Participation





Problem Solving Methods

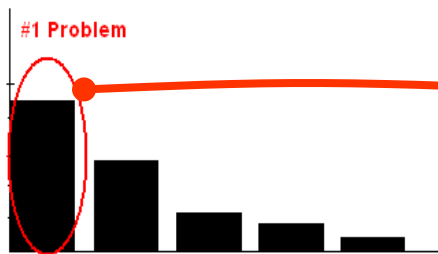
Characteristics of a problem & problem solving methodology:

Characteristic	Method	Action	Expectations
The problem is tactical & immediate	Rapid Problem Solving	Identify accountable leader and implement	Immediately implement sustainable solution
Characterized by waste elimination or cycle time reduction	Kaizen	Empower team to rapidly implement minor changes	Less precise but rapid implementation
Characterized by variability Quality, Cost, Yield	Six Sigma	Sponsor analysis 3-6 month program	Highly precise solution

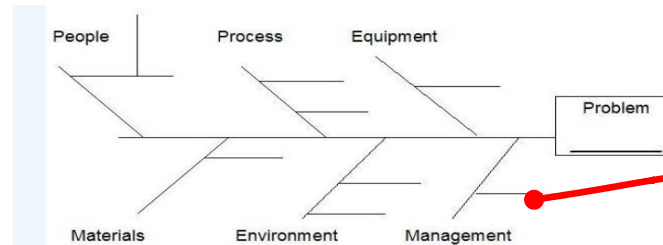


Rapid Problem Solving

Consistently utilize a limited set of problem solving tools in a repeatable process



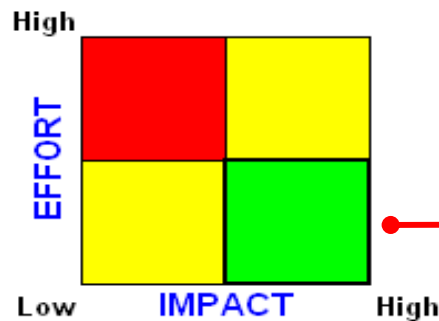
Pareto



Fishbone

5 Why

Determine root cause



Impact vs Effort

Implementation Plan



Root Cause Problem Solving

- Acting on root causes of problems ensures effective, sustainable solutions are identified
- Data driven process
- Higher probability problems do not recur
- Engaging employees in process enables acceptance of solution





Benefits of Lean Sigma

- Greater strategic focus of the business
- Defined formal monthly meeting process
- Data driven decision making
- Structured method to elevate and address significant business threats
- Repeatable approach to problem solving

Improves

Cost
Compliance

Customer Service
Employee Engagement



Final Thoughts

- Innovative use of a few tools
- Techniques are not difficult to implement, available to any size organization
- Requires management commitment to sustain results





Michael Schickler
michael.schickler@abbott.com



Operational Strategies for Lean Sigma Manufacturing

