Facilitating the Lean Kaizen Event

Project Management Perspective

Presenter: Jeff Buresh

- An Industrial Engineer at HP for over 17 years
- Leading lean efforts for about 10 years
- Started work in the print head & supplies assembly in Corvallis, but have facilitated events in the HP Fabs, Singapore and San Diego as well as at suppliers.
- Held Kaizen Events in production, proto and product development

Project Management & Kaizen Event Skills

- Description of Project Management from the Web: **"Project Management is like pushing a wheelbarrow of frogs to market."**

- One of my best compliments to date came form a key partner after a Kaizen Event with a mix of Corvallis and Singapore Engineers: **"Jeff is able to herd cats better than anyone else I have seen!"**

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Intro to the Kaizen Event

- Credit and Thanks goes to my first Lean Trainer/Mentor Mike Rowney of the ETI Group

- Objectives
  - To explain the Kaizen Event from the project management perspective
  - To describe the facilitator's role to assure a successful Kaizen Event

Agenda

- Lean and The Kaizen Event
- Preparing for a Kaizen Event
- Holding the Kaizen Event

What is Lean?

- "Lean" is simply doing more with less.
  - Used to describe Toyota's ability to design, produce and deliver high quality products using a fraction of the resources used by competitors.
- It is a strategy that focuses on adding **value to the customer** by:
  - increasing speed,
  - eliminating waste,
  - insuring quality at the source and
  - process capability is linked to demand.
- It's a way of thinking and seeing
- It's the use of methods and tools

Core Principles of Lean

- **Determine and create value** – what does the customer want? – **Value is defined by the Customer**
- Identify all the steps in the **Value Stream** and eliminate or minimize steps and actions that do not create value.
- **Make the work "flow"**, so that there are no interruptions and no wasted time or materials.
- **Use "pull" instead of "push" systems** to avoid overproduction.
- **Eliminate the speed bumps caused by waste**
- **Pursue perfection** through continuous improvement using the proven Plan-Do-Check-Act cycles.

Kaizen and Kaizen Events

- Kaizen—Japanese word meaning "continuous improvement", implying many small improvement steps

- Kaizen Event—concentrated effort leading to a major improvement (50% or more)
  - Kaizen Blitz
  - Accelerated Improvement Workshop (Boeing)
  - Rapid Improvement Workshop
  - Action Workouts (GE)

Kaizen Event

- Produces dramatic stride towards Lean in a very short time (a 50% improvement now is OK)
- Strategy can be implemented via a series of kaizen events
- A tactical tool for executing lean transformation

Time

Time

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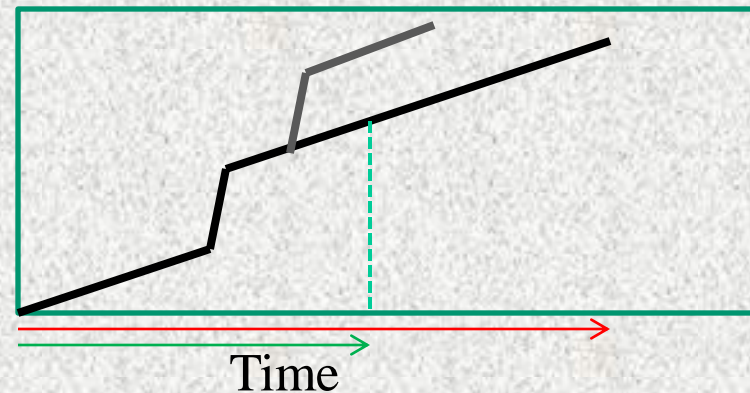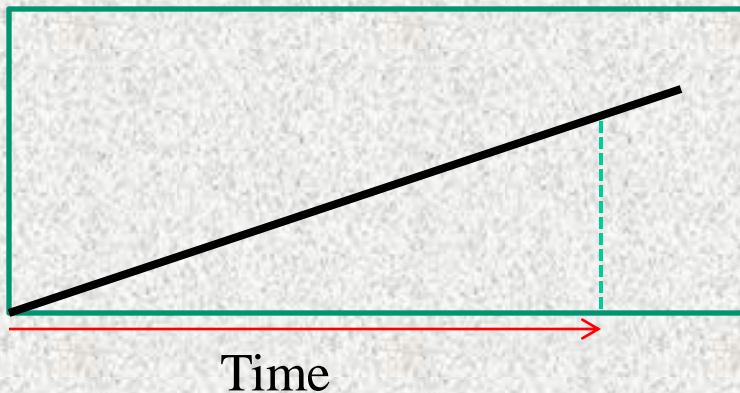
The Power of Kaizen Events

- Powerful synergy of top-down with bottom-up
  - **Top-down:** management provides direction, resources, empowerment, encouragement
  - **Bottom-up:** empowered front line associates supply skills, knowledge, ideas, decisions, action

How a Kaizen Event Works

- Management selects area and sets goals
- Management with facilitator's help selects team & **frees them up for the event**
- Management Communicates goals, but leaves **"how"** to the team
- A skilled Kaizen facilitator is provided
- Anchored in the Lean **"Spirit of Improvement"**

The Spirit of Improvement

- Improvement is everyone's job
- Discard your old attitudes. **Don't say "can't"**
- Ask, "Why?"
- More ideas are better, especially from people who know the process
- Focus on how to make the new ideas work
- **Don't substitute money for brains**
- An **immediate 50%** improvement is **OK**
- **Don't just plan. "Do"**
- Empower people to fix problems, not just study them
- Improvement is not made from a conference room
- Follow up to make sure the ideas are working
- Improvement is endless

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Kaizen Event Typical Results
(Source Mike Rowney of ETI Group)

- Throughput time reduced 50-90%

- WIP reduced 20-85%

- Setup time reduced 30-85%

- Defects reduced 50-100%

- Parts/paperwork/people travel distance reduced 50-85%

Highly Flexible

- A generic "War on Waste" event, can be used for
  - Problem solving
  - Re-engineering
  - Very specific improvements, e.g. reducing setup time
  - Lean Six Sigma projects
- New Product Development/New Product Intro
  - HBR (How's it Built Review)
  - 3P (Production Preparation Process)
  - TOC (Theory of Constraints implementation)

Universal in Application

- Shown to be Effective in:
  - Manufacturing
  - Product Development
  - Hospitals
  - Laboratories
  - Service
  - Office
  - Non-profit organizations
  - Government Services

Operational

Transactional
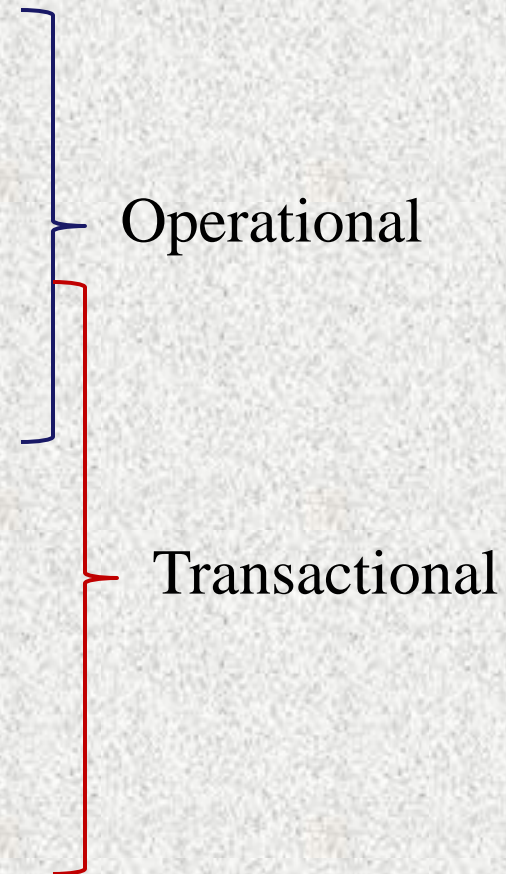
External Case Example Technical Publishing Co.

- First Kaizen event in parts compiling, quality control and illustration processes
- In five days, team established a work cell
- Results
  - 82% reduction in throughput time from 110days to 20 days
  - 69% reduction in work-in-process from 16 units/employee to 5 units/employee
  - 96% reduction in travel distance from 3542 ft to 139ft
  - 65% reduction in number of process steps from 78 to 27
  - 81% reduction in number of handoffs from 21 to 4

Technical Publishing Company Sequel

- Management decided to reorganize entire operation into work cells

- **Over one weekend, 600 employees in 2 of 3 buildings rearranged into work cells**

- Two weeks later smaller group also rearranged

- Overall throughput time reduced from 110 days to 8 days (93%)

- 85% reduction in average direct labor hours per unit of raw material consumed

Corvallis Kaizen Event Results

- Proto Final Assembly
  - Completely rearranged the entire proto line including moving 2 massive bases in the last 2.5 days of the event setting up cells
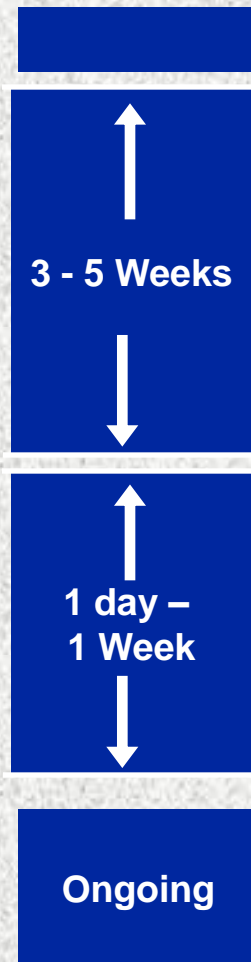 - Increased parts out and decreased throughput time
- Ink Supplies 3P (New Product Introduction)
  - Semi-auto line decreased headcount by ~ 45%
  - Capital decreased from estimated cost by ~ 33%
- Photo Kaizen Event
  - 32% reduction of process steps per level
  - 43% reduction in set up time
  - 33% reduction in travel distance

How Does Everything Get Done in a Week or Weekend?
Pre-Kaizen Event Preparation!

THREE WEEKS BEFORE	TWO WEEKS BEFORE	ONE WEEK BEFORE
1. Review Assessment data 2. Complete Event Planning Checklist 3. Complete Downstream Customer Requirements 4. Select a representative product/part/document 5. Walk the process and document a preliminary value stream map; draft preliminary charters and boundaries 6. Collect and analyze process data 7. Schedule the event 8. Draft a Team Charter 9. Get management approval on Team Charter 10. Develop Communications Plan 11. Assign Facilitator tasks for the remainder of the Plan step and the Event itself 12. Plan management and employee training as needed 13. Schedule meeting and breakout rooms 14. Have manager responsible for area notify team members, especially to change shifts	1. Implement the Communications Plan Communicate date, purpose, roles to all participants, resource reps and others 2. Select the appropriate Technical Modules 3. Set the Agenda 4. Conduct management and employee training if needed 5. Review preparations for the Event Coordinate progress with the management team Order meals and refreshments	1. Organize presentation materials, nametags, tent cards, worksheets, etc. 2. Plan the meeting room layout 3. Prepare teaching assignments 4. Prepare process expert to guide the value stream mapping exercise 5. Check in with team members. Make last minute substitutions if necessary 6. Check in with resource representatives and others 7. Organize the process data into a friendly form for the team members 8. Check on meals and refreshments 9. Meet with management team to review roles and when their presence is required during the week

Four Essential Steps of the Kaizen Event

3 - 5 Weeks

1 day – 1 Week

Ongoing

- Select: Identify target area
- Plan:
  - Develop objectives, goals, boundaries, for workshop
  - Preliminary analysis
  - Readiness check
  - Team assignments
- Implement:
  - Technical education
  - Current state, desired state
  - Implementation of tools/techniques
  - Report out
- Follow-Up:
  - Complete action items
  - Sustain gains

Select

- **Major Learning**: one cannot not PUSH improvement within the HP culture
  - *Need to have **PULL** from several layers of the management chain to have a successful Kaizen Event*
  - Every time we have been brought into an area from an outside sponsor, results have been limited and not sustained
- Selection Process has become simple, we wait for customer requests on specific, large issues

Planning Objectives

- Define process boundaries

- Set targets

- Select participants, resource representatives, and stakeholders

- Have management team approve and sign the Team Charter

- Prepare for the actual event: scheduling, communications, logistics

Planning Steps (Typical 1 Week Event)

- Go through Event Planning Checklist and identify issues to be factored into the detailed plan

- Survey downstream customers for requirements

- Select a representative product/part/document

- Walk & document the process, collect & analyze data

- Draft Charter with preliminary targets and boundaries

- Create detailed Event Agenda and Communication Plan

- Schedule and prepare for the event

- Finalize Team Charter, get management approval, and prepare them for the event

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Event Planning checklist

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Event Planning Checklist

- Work through the Event Planning consider
  - the process
  - the participants
  - the organization as a whole
- Implications for the Event
  - Modules to emphasize
  - Where management support may be critical
  - Actions to take prior to the Event
  - Coaching for management, team members and others

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Downstream Customer Requirements

- Could be Internal or External Customers
- Interview key customers to understand their requirements for the output received from the subject area
  - Quality: fewer errors/defects (specify worst problems)
  - Delivery: where delivered, at what intervals, in what quantities, in what configuration/presentation
- Have used group brainstorming with multi-voting
- Avoid actions that reduce the efficiency of the downstream areas

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Identify a Representative Product/part/document

- Where several different products or parts (or documents in an office Event) are processed
  - You need to pick the most representative item so improvements made during the event apply to all or most items flowing through the area
  - Consider several factors
    - Customer complaints (delivery, quality, etc.)
    - Relative volumes
    - Profit margins
    - Schedule

Walk & Document Process

Go to Gemba – the place where value is created

Avoid surprises during the event, do not overlook this step!

- On the shop/office floor, with the help of the process expert, follow each step of the process in detail for the selected product/part/document
  - Imagine you are the item. How are you moved? Where and how long do you wait? Who touches you? How are you changed?
  - How does information move with the item
- Record findings on the Value Stream Mapping Worksheet
- Use findings to make a final determination of the process boundaries

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Collect & Analyze Process Data

Purposes

- Develop baselines for setting Event improvement targets
- Prepare key data for representative item selected for the team members to use during the event
- Types of data that are useful
  - Quality (defects, customer complaints, rework rates, scrap)
  - Cost (output/labor hour, down time, set up time)
  - Delivery (throughput time, on time delivery, variability)
  - Customer satisfaction (internal and external customers)
- Try to get as much trend data as possible

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Draft the Team Charter

Formal communication from Mgmt Team to Kaizen Team & Target Area Staff

Production Preparation Process (3P) **Kaizen Event 2**
Team Charter - November 17th – 20th, 2008

	Team Member	Core	Ext	Area
Engineering		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Manufacturing Engineering
		X		Product Engineering
		X		Product Engineering
		X		R&D Engineering
		X		R&D Engineering
		X		Packaging Engineering
		X		Ergonomics Engineer
			X	Human Factors Engineer
		X		IJMS-Process Engineering
		X		IJMS-Process Engineering
Operations			X	Operations Supervisor
		X		Process Tech
			X	R&M Tech
		X		Operator
		X		Operator
Supply Chain			X	Documentation
Facilitators		X		Lean Methods Engineer
		X		Lean Methods Engineer
		X		Lean Methods Engineer
		X		Lean Methods Engineer

ive	1. Optimize line layout, material flow within and between cells, and process flow 2. Identify Tooling, Changeover, Fixturing and Error Proofing Requirements 3. Identify and DFA & DFM issues and communicate these to R&D for DI2 consideration 4. Create staffing model with better understanding of FTE/PPM to run line 5. Create Model for Data Flow (audits, paperwork, part tracking)	
Scope	Start:	Parts delivered to the assembly area (13mm & 31mm)
	End:	assembled, tested and packaged
ary tions	Any changes will enable pull system and Corvallis head count of in first half of '09	
s	Staffing Levels	(pre-package)
	Line Layout	Optimized Cellular layout in place on available floor space
	Quality	> 90% yield prior to package
	Process Flow	Improved process flow for materials and data implemented to meet HC targets with Standard Work draft documents complete

is directed to achieve the above targets by identifying and removing wastes and designing a new assembly g process using the principles and practices of Lean Manufacturing.

is empowered to make decisions and create a process that can be developed and proven in time for product ther potential recommendations that are outside the team's power to implement, or that would require capital t, are to be included in the final report. Management will give serious consideration to acting on these ndations.

ent will follow your actions with interest but without interference. We stand ready to provide support and arriers. We have every confidence in your team's ability to achieve a great deal in a short time.

Names Team Members

Objectives

Scope

Boundary Conditions

Targets

Sponsors' Commitment

Sponsors' Signatures

The Event Team

- Team size
  - Can vary from 4 to 30+
  - The more people, the more action sub-teams of 2-4 people
- Factors governing team size
  - Number of people in the area for the Event
    - Balance area representation with ability to keep producing
  - Size of the meeting room
  - Best team dynamics with 6-12
- Team is dedicated to the event!
  - Do not leave unless emergency
  - Not focusing on email or OC – stay on task

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Team Member Selection Criteria

- Process knowledge
  - <u>Majority</u> should be from area of Event & cover all shifts
  - Specialized knowledge of operations
  - "The stripes come off" during the Event: role is team member not manager, supervisor, technical expert, etc.

- Personal styles
  - Natural leaders
  - Skeptics (especially if they are natural leaders)
  - Former idea people who are now turned off
  - Consider Outsiders for "fresh eyes

- Stakeholders

Extended Team Members

- On call during the Event; attend report out sessions
  - Maintenance
  - Information Systems
  - Specific Engineering (depending on event)
  - Accounting
  - Quality

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Setting Targets

- Combine observations from the Process Walk with the Process Data and Management's objectives to draft targets to recommend to the management team

- Targets should be
  - Focused to meet the objectives
  - Few (ideally 2 or 3, 4 max)
  - Aggressive but not fantasy; much more than the extension of a current positive trend – stepped improvement
  - Result in a meaningful benefit
  - Inspire the team to unusual heights of performance

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Set Event Agenda

Day 1 - Mon., Nov. 17th	Duration	What	Who	Start	Finish	Notes
Event Kick Off	50	• Welcome • Kick Off • Objectives For Event • The Anatomy of a 3P Event • Event Agenda • Agenda for day • Spirit of improvement • Personal introductions • Ground rules & personal expectations	Jeff Mgt Team	8:00 AM	8:50 AM	
Program Info	20	• Cost Targets • Assembly Drawings • List of Parts • Schedule/CM	Jonathan Mark	8:50 AM	9:10 AM	
Lean Concepts Part 1	65	• Waste • Flow (Batch vs. SPF) • Standard Work (number exercise) • Visual Controls	Rob	9:10 AM	10:15 AM	
Break	10		All	10:15 AM	10:25 AM	
Lean Concepts Part 2	55	• Quality (PokeYoke) • Human Capability (Blow Hard Reactor Exercise) • Changeover & Set-up Reduction • Incremental Capacity Strategy (Spiral Up to automation)	Jeff	10:25 AM	11:20 AM	
Lunch	30			11:20 AM	11:50 AM	11:10 Arrival
Fishbone	60	hand builde 3X then fishbone		11:50 AM	12:50 PM	
Choose Process Groupings	15			12:50 PM	1:05 PM	
Lean Concepts Part 3	15	• 3P Catchphrases	Jeff	1:05 PM	1:20 PM	
Create 7 Alternatives & eval	100	2 teams with 2 areas each + sharing		1:20 PM	3:00 PM	40 brainstorm, 30 share, 30 eval
Break	10			3:00 PM	3:10 PM	
Create 7 Alts & eval (cont)	100	2 teams with 2 areas each + sharing		3:10 PM	4:50 PM	40 brainstorm, 30 share, 30 eval
Day's Wrap Up	10			4:50 PM	5:00 PM	
	540					
Day 2 - Tues., Nov. 18th						
Day's Start	15			8:00 AM	8:15 AM	
Create 7 Alternatives (cont)	100	2 teams with 2 areas each + sharing		8:15 AM	9:55 AM	40 brainstorm, 30 share, 30 eval
Break	10			9:55 AM	10:05 AM	
Create 7 Alternatives (cont)	100	2 teams with 2 areas each + sharing		10:05 AM	11:45 AM	40 brainstorm, 30 share, 30 eval
Lunch	30			11:45 AM	12:15 PM	11:15 Arrival
Assign Actions & Simulate	130			12:15 PM	2:25 PM	
Break	10			2:25 PM	2:35 PM	
Improvement ideas	60			2:35 PM	3:35 PM	
Prep for report out	40			3:35 PM	4:15 PM	
Report out	30			4:15 PM	4:45 PM	
Wrap Up	15			4:45 PM	5:00 PM	
	540					
Day 3 - Wed, Nov. 19th						
Day's Start	15			8:00 AM	8:15 AM	
Simulate & improve	90			8:15 AM	9:45 AM	
Break	10			9:45 AM	9:55 AM	
Select top 1 & complete process at a glanc	45			9:55 AM	10:40 AM	
Build parts and Take Times	30			10:40 AM	11:10 AM	
Lunch	30			11:10 AM	11:40 AM	11:00 Arrival
Build parts and Take Times (continued)	30			11:40 AM	12:10 PM	
Create Work Combinations and Layout	150			12:10 PM	2:40 PM	
Break	10			2:40 PM	2:50 PM	
Move Tools	75			2:50 PM	4:05 PM	
Demonstrate/Document	40			4:05 PM	4:45 PM	
Wrap up	15			4:45 PM	5:00 PM	
	540					
Day 4 - Thursday, Nov. 20th						
Day's Start	15			8:00 AM	8:15 AM	
Define Information and Material Flow	135			8:15 AM	10:30 AM	Continue with documentation
Break	10			10:30 AM	10:40 AM	
Create Action Plan & Report Prep	65			10:40 AM	11:45 AM	
Wrap Up	15			11:45 AM	12:00 PM	
Report Out	30			12:00 PM	12:30 PM	
Celebration Lunch	30			12:30 PM	1:00 PM	12:00 arrival
				1:00 PM	1:00 PM	
facilitator wrap up	30			1:00 PM	1:30 PM	

- Based on the targets of the Event, select the appropriate:
  - training modules,
  - areas of focus,
  - process walks,
  - hands on exercises,
- Facilitator needs to be ready to adapt to schedule changes

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Schedule & Prep for Event

- Select the week/dates for the Event

- Managers must guarantee that the team members from their areas are available <u>without interruption all week,</u> and if necessary assign someone to cover their regular work

- Schedule meeting room, coffee, meals and if needed breakout rooms for sub teams (don't let team leave area)

- Prepare presentation materials (PowerPoint slide, overheads, flipcharts)

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Schedule & Prep for Event

- Prepare Process Simulation Kit
- Prepare handouts
  - Process Walk Worksheet
  - Simulation handouts
  - Work Combination sheets,
  - Others
- Prepare flipcharts or posters of
  - Team Charter
  - Process Flows or Product Drawings
  - Ground Rules for Teams
- Assemble supplies

Finalize with Management

- Meet a couple days prior to Event start
- Purpose:
    - Review targets
    - Address issues
    - Review and sign Team Charter if revised
    - Review the expectations of the management team (may need to help them with their presentation)

Role of Management Team

- Assure uninterrupted team member participation
- Empower the team to make changes
- Remove barriers and provide support so that team makes changes rapidly
- Take risks, and encourage the team to do the same
- Balance suggestions for improvement with acknowledgment of the team's accomplishments
- Celebrate and congratulate the team on successes

Planning & Prep Completed!

Now we can hold the Kaizen Event

(Example a Typical 1 Week Event)

Holding the Kaizen Event

Introduction

•Begin building the Spirit of Kaizen

•Establish the context and expected outcome of the Event

•Gain cooperation, group trust, and set ground rules for working together as a team

•Define the Kaizen Event and Lean as powerful tools for improvement

•Kickoff by Sponsor (Team Charter: Expectations)

•Introductions of Team members

•Logistics for the week

•Ground Rules and The Kaizen Spirit: What it means

Holding the Kaizen Event

Training

- Introduction to Lean Principle/Lean Product Development

- Alignment around the product or process & its issues

- Modules and exercises determined during preparation (waste, flow, pull, SMED, TOC, Standard Work, etc.)

- Process Simulation

- General Rule $\leq$ 20% training and $\geq$ 80% doing

Holding the Kaizen Event

Day 1 (standard event)

- Perform Process walk (follow part and information)
    - Each sub team member has a role (wasteologist, map maker, pacer, recorder, queue counter.)
    - develop ground level, current state VSM
    - Identify waste and inefficiencies
    - Present findings (may be day 1 report out to the sponsors)
- Daily process check: what worked/needs work

Holding the Kaizen Event

Day 2

- Review Day 1

- Learn some methods of attacking waste

- Build and align on a vision of process improvement to meet the targets of the Team Charter

- Develop action plans

- Share vision and plans with management team
  - All team members take turns presenting at some point in event
  - Get feedback & approval from management to implement plan

- Daily process check: what worked/needs work

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Holding the Kaizen Event

Days 3 and 4 Implement Action Plans

- Start Day 3 by reviewing management team input, and agree on any adjustment to plans

- Designate team members to explain vision to operators in the area

- Take lead on removing barriers and arranging support

- Ensure that the team continues to communicate with their colleagues who work in the area

- Both days hold progress review/integration meetings
  - Beginning of the day
  - After lunch
  - End of the day prior to process check

- Daily process check: what worked/needs work

Holding the Kaizen Event

Day 5 (usually half day)

- Close out implementation about 9am (no later than 10) and convene the team

- Prepare for Final Report
  - Arrange room large enough for management team, resource representatives, other interested parties
  - Report Format
    - Briefly summarize old process performance from Day 1 data
    - Describe new process
    - Describe actions taken
    - Present before and after results
    - Describe Follow-Up Action Plans remaining to be completed
    - Recommendations for management (opportunities or problems outside the power of the team)
    - Questions?
  - Hold celebration lunch, encourage sponsors talk with team

Follow Up

- Facilitator should follow up on the Kaizen Event At 2 weeks and 6 weeks (& possibly 3 months)
  - Verify local ownership
    - that the area manager has taken ownership of the Event improvements, is maintaining them, and encouraging further improvements
  - See to the completion of follow-up action plans
  - Stimulate the extension of the Event improvements to like processes
  - Stimulate work on systems issues

Questions or Comments