



Key Concepts of Lean

Instructor: Dave LaHote



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Lean Enterprise Institute

- Lean Enterprise Institute, Inc. (LEI) is a nonprofit education, publishing, conference, and research organization founded by James Womack, Ph.D. in 1997 to promote and advance the principles of lean thinking in every aspect of business and across a wide range of industries.
- Through its publications, summits, conferences, workshops, webinars, online forums, and website resources, LEI helps organizations transform themselves into lean enterprises, based on the principles of the Toyota Business System.
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Dave LaHote

Dave LaHote is a retired senior executive who is currently an educator and advisor to organizations making the lean leap.

From 2006 to 2011, Dave served as the president, Lean Education, for the Lean Enterprise Institute in Cambridge, MA. Dave came to LEI with over 35 years of experience in manufacturing and service companies. He ran business units in Parker Hannifin, Eaton, and Aeroquip-Vickers Corporation and previously held senior management positions in marketing, business development, and human resources. He is a "shop rat" having grown up in the family manufacturing business. In the early 1990's he was responsible for lean implementation across a diverse \$2 billion manufacturing company and began his long-term relationship with Jim Womack, founder and chairman of LEI.

Dave has taught executive education classes on a wide variety of lean manufacturing, strategy development and management topics. He is currently on the faculty of the University of Michigan's Lean Healthcare program and has been a part of Ohio State University's Masters in Operational Excellence program.

Dave holds a bachelor's degree in liberal arts and a master's degree in Organizational Development from Bowling Green State University.

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Lean Enterprise Institute
lean.org

Mission:

*Make things better through
Lean Thinking and Practice*

Founded in 1997 by
Dr. James Womack.
Non-profit education and
research institute based
in Cambridge, MA.



Education

- Public Workshops
- Online Workshops
- On-Site Training
- Co-Learning Partnership
- Extensive list of Faculty and Associates

Website lean.org

- Over 250,000 members
- Free webinars
- In-depth case studies

Learning Materials

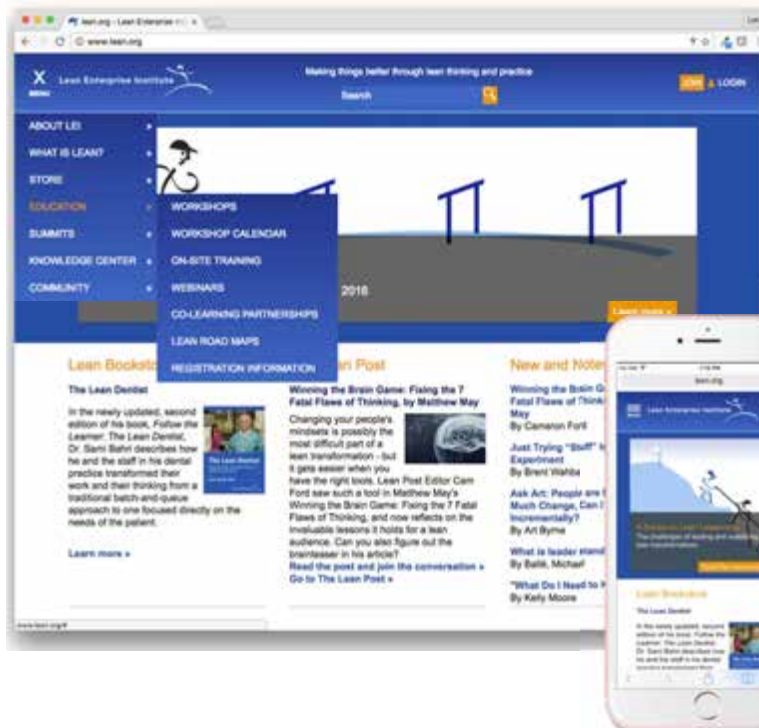


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- Lean Global Network
- Healthcare Value Network
- Public Services Value Network

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Thank you!

Agenda

Day 1

AM – Building the Foundation Purpose

- Defining Lean
- The people based foundation for implementing Lean
- An overview of Lean as a “System”

PM – Lean Methods/Tools Process

- Comparing manufacturing systems (push vs. pull) – The Cups Simulation
- Introduction to the tools , their usage and how they work together as a system

Day 2

AM – Lean Methods & Tools continued

- Process and People – Seeing Together
 - Value Stream Mapping
- Creating value and process design
 - Flow and pull systems

PM – People Issues in Lean Implementation

- Measurements and other business system issues
- PDCA/A3 Thinking and Management
- Lean Leadership challenges and implementing change in the organization

What Does Lean Mean?

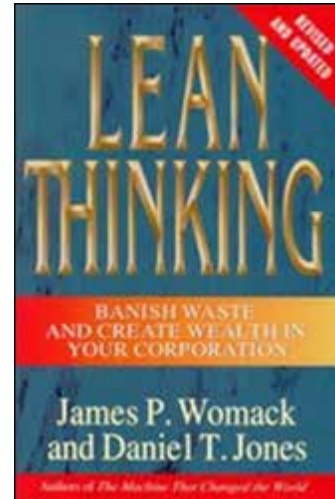
Provide the most value from the customer’s perspective while consuming the fewest resources and utilizing the talents of the people who do the work. *Common Definition*

“The permanent struggle to better flow value to each customer.” *Quality Progress Magazine Feb. 2014*

“All we are doing is looking at the time line from the moment the customer gives us an order to the point when we collect the cash. And we are reducing that time line by removing the non-value-added wastes.” *Taiichi Ohno 1988*

Lean Thinking

1. Specify **value** from standpoint of the customer.
2. Identify the **value stream** and remove wasted steps.
3. Cause the remaining steps to **flow**.
4. But only at the **pull** of the customer.
5. In pursuit of **perfection**.

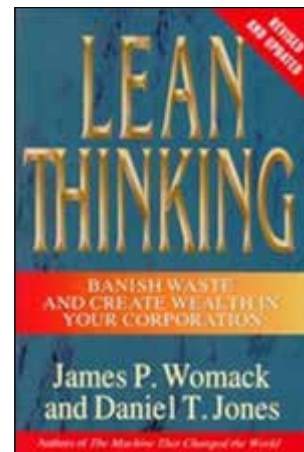


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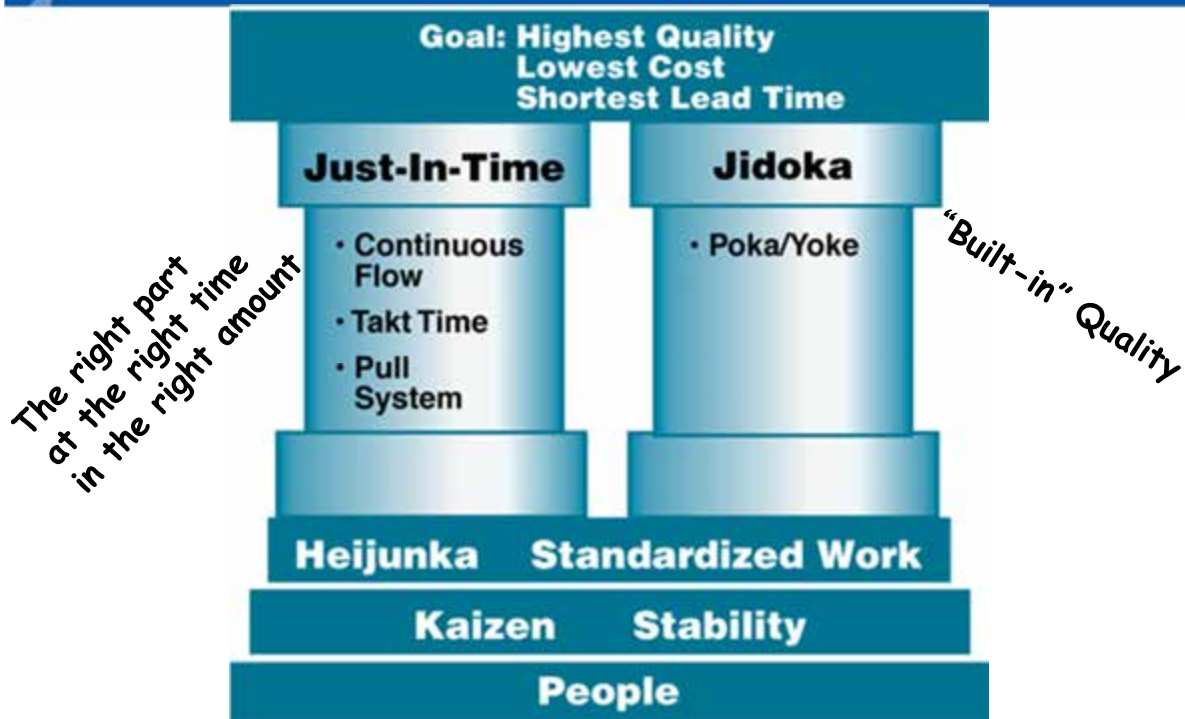
Becoming Lean

In 1996, Womack & Jones proposed an action plan:

1. Find a change agent.
(How about you?!)
2. Get the lean knowledge.
3. Seize the crisis. (Or create one!)
4. Map your product family value streams.
5. Get started immediately & demand results.



Toyota Production System



Courtesy of Toyota circa 1990

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But...It's Been Hard to Do & Sustain!

Tools are everywhere and many heroic "lean" programs have been mounted, but the improvement in most businesses has been modest.



- ✓ Map Value Streams
- ✓ Eliminate Waste
- ✓ Install Visual Management
- ✓ Standardize the Work
- ✓ Make Work Flow
- ✓ Level and Balance
- ✓ Do Fast Set-up
- ✓ Install Andons
- ✓ Make No Errors
- ✓ Do 5S
- ✓ Create A3's
- ✓ Hoshin Plans

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What We Heard About Deployment

- Lean is a “Program” of technical tools and methods used to eliminate waste (cut costs) and improve processes/quality
- Tools for the front lines: cells, 5s, poka-yoke, andon, Value Stream Mapping, etc
- Lean must be done in a specific way to be effective (benchmarking and best practices)
- Kaizen blitzes/events (organized employee involvement)
- Lean can/should be delegated to improvement “experts” (internal or consultants)
- Lean metrics (# of kaizens, audits of tool use, etc.)
- Changing the “culture” – Long journey “Driving Change”

Typical Approaches to Lean

Tools Focus →

5S *Kaizens*

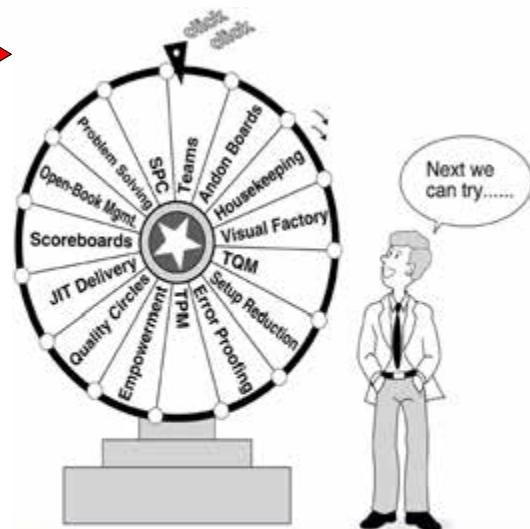
Kanban

Heijunka

TPM

Cells

Teams





Results?

- Not bad. Usually some early results (low hanging fruit)
- Improvement plateaus quickly
- Problems associated with sustaining activities
- Longer term results not sufficient/below expectations



Some Typical Problems

- Lean doesn't reduce costs – it frees up resources
- While it is easy to have experts or staffs using tools, it only creates temporary change
- Doing the “Program” becomes more important than getting real results
- A “System” gives the illusion of standardized learning but it is usually just compliance



Every Organization Must Address

Purpose – Provide value to customers cost effectively (make money and grow)

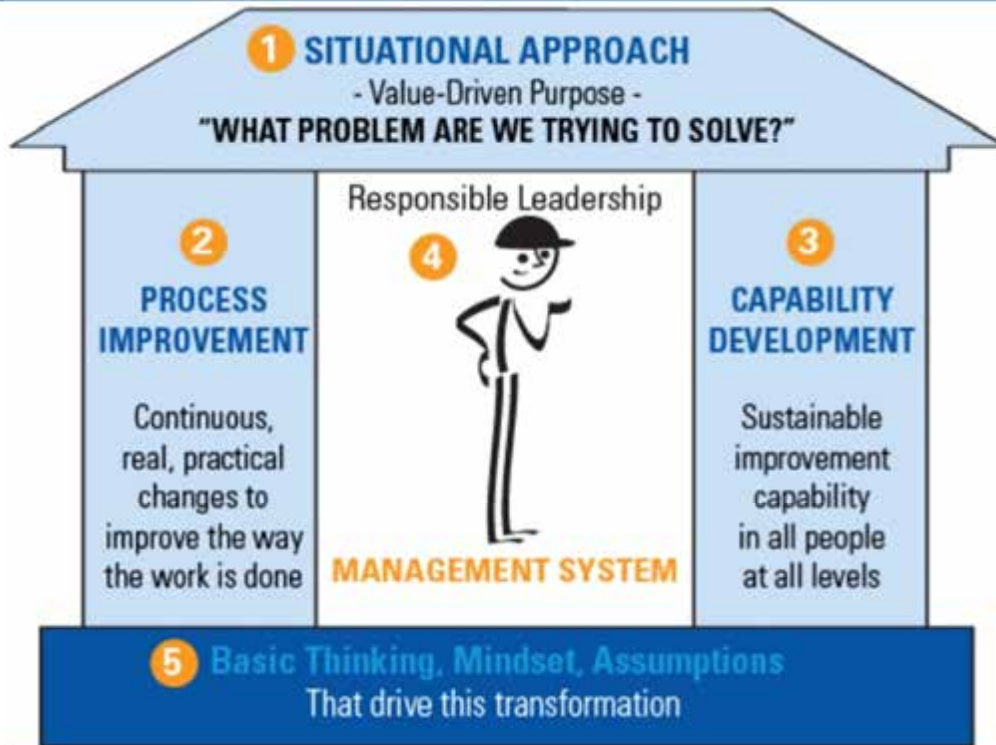
Process – Through value streams that are designed, operated and improved

People – By engaging and respecting the people who do the work



Most Organizations Struggle

- **Purpose** is not clearly defined in terms of solving the customer's problems or addressing the business need.
- **Processes** creating value to address the purpose are not clearly specified and visible to everyone.
- **People**
 - *Focus on the point they manage (often driven by point metrics) rather than optimizing the whole value stream.*
 - *Lack technical competence and a scientific method for improvement – Plan Do Check Act (PDCA) – in order to “manage by science.”*



Thinking

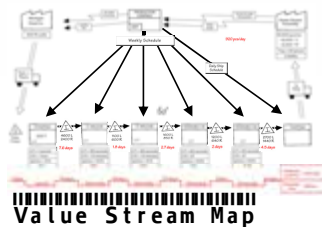
Focus on key business needs and the practice of the scientific method (PDCA)

- Create cycles of observing and changing individual's work processes
- Tools used as needed and only if they work
- The "System" is discipline

Key Concepts

- Plan Do Check Adjust (Act)
- Develop people to get better results
 - *People centered processes*
 - *People centered management*
 - *Remove the obstacles in the way of them doing the job well*
- Put **effectiveness** before efficiency
- Problems are a good thing
 - *Key processes in visual control*
 - *System to respond to a call for help*
 - *Involve everyone formally in improving their jobs and solving problems*

Using Tools to Better See and Understand Processes



Staffing Board



Kanban Card

Heijunka Box



LINE	SHIFT NUMBER	TOTAL	BOXES	QTY	COMMENTS	TOTAL	DIFFERENCE
10-1	1080	1080	10	1080		240	- 840
10-2	1080	1080	20	2160		240	- 1440
10-3	1080	1080	12	1296		720	- 360
10-4	1080	1080	10	1080		840	- 240
10-5	1080	1080	10	1080		480	- 600
10-6	1080	1080	15	1620		780	- 300
10-7	1080	1080	10	1080			
10-8	1080	1080	10	1080			

Production Boards

The 3 M's

Mura - Unevenness (caused by variability from inside and outside the organization)

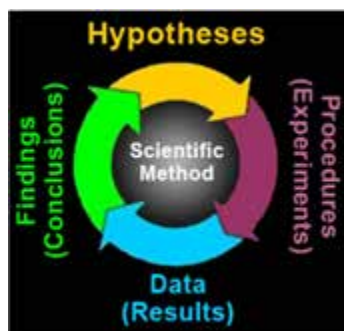
Muri - Overburden (stretching people or machines beyond their optimal limits)

Muda - Waste

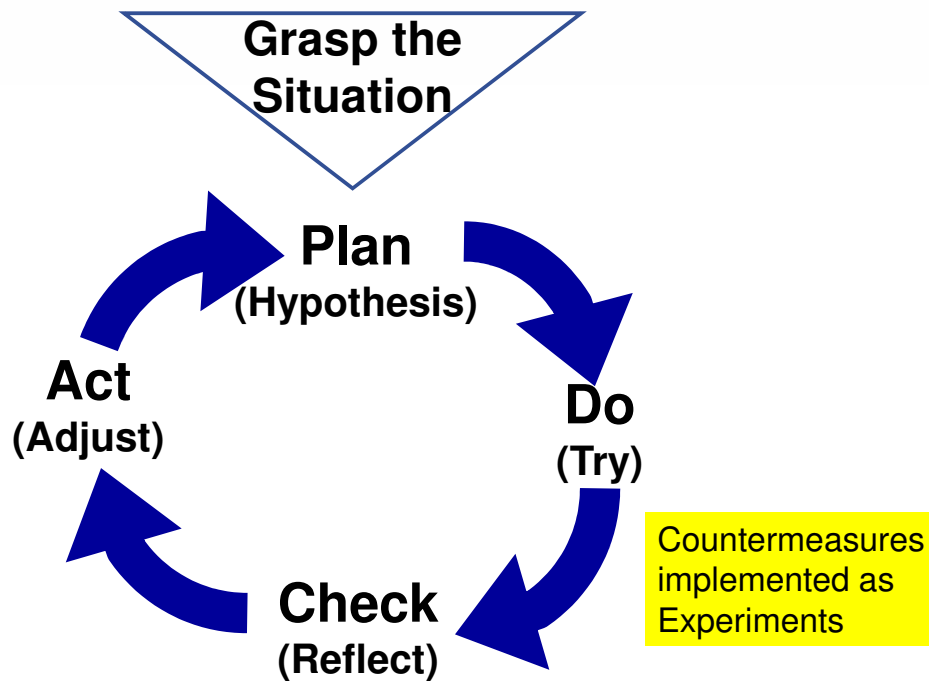
The Scientific Method

Techniques for investigating phenomena, acquiring new knowledge or correcting and integrating previous knowledge

In order to be “scientific” it must be observable, empirical and measureable evidence based



Scientific Method (PDCA Cycle)



Underlying Management Methods

Go See

Management must spend time on the front lines – see and understand first hand

Ask Why

Use the “Why?” technique to clarify understanding – don’t tell people what to do

Show Respect

Respect your people – don’t ask them to do wasteful work, have them solve their own problems



Lean Principle

Lean tools were invented to help people analyze their own work processes. To help them learn how to see the waste (muda) themselves so they can improve their own work.



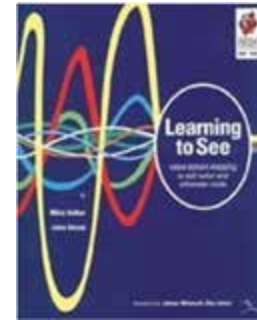
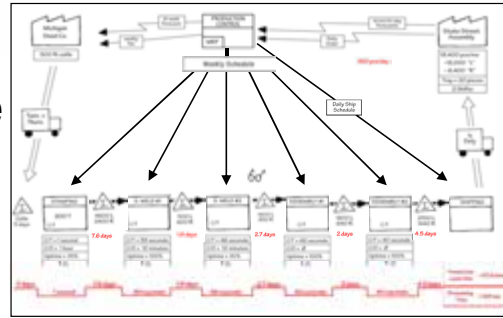
Lean Tools

The Goal is Flow Through the Value Stream

- **In which every step in each process is:**
 - **Capable** – right every time (6 Sigma)
 - **Available** – always able to run (TPM,OEE)
 - **Adequate** – with capacity to avoid bottlenecks (right-sized tools, lean manufacturing system design, and focused supply base)
 - **Flexible** – able to switch quickly at low cost

Value-Stream Mapping

- A simple visual tool
- Identifying the current state
- Envisioning future states
- Giving everyone touching the value stream a common language for discussing improvement



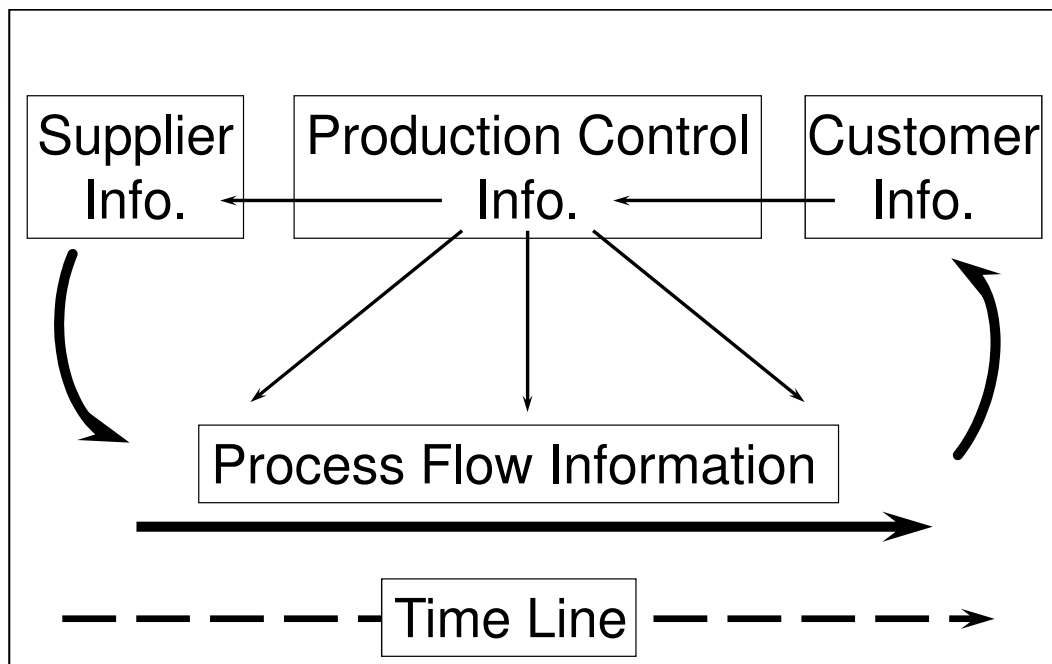
The Value-Stream Mapping Tool

- Helps you visualize more than just the single-process level of production
- Helps you see waste and the sources of waste
- Provides a common language for manufacturing processes
- Makes decisions about flow apparent
- Ties together lean concepts and techniques to avoid “cherry picking”
- Forms the basis or blueprint of an implementation plan
- Shows the linkage between the information flow and material flow
- Is a qualitative tool by which you describe in detail how your facility should operate in order to create flow
- Provides a method of focusing your improvement activities

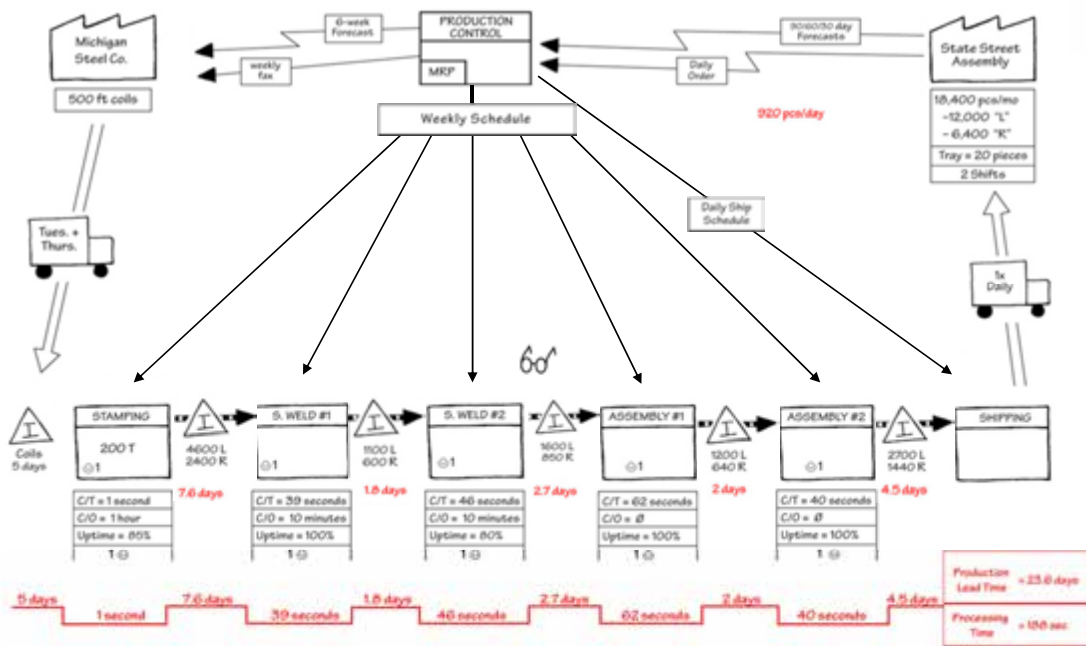
Doing a “Current-State” Map

- Door-to-door flow in the plant for a product family
- Draw process categories like “assembly” and “welding” instead of recording each step
- Start at the customer end (shipping) and work back through the flow
- Use a stopwatch, *do not* rely on standard times from the computer system and make actual counts of WIP
- Everyone does the whole map. Don’t split up the process flow between team members
- Use a pencil, draw by hand and begin a rough sketch right on the shop floor

Map Layout Geography



Current State Value-Stream Map



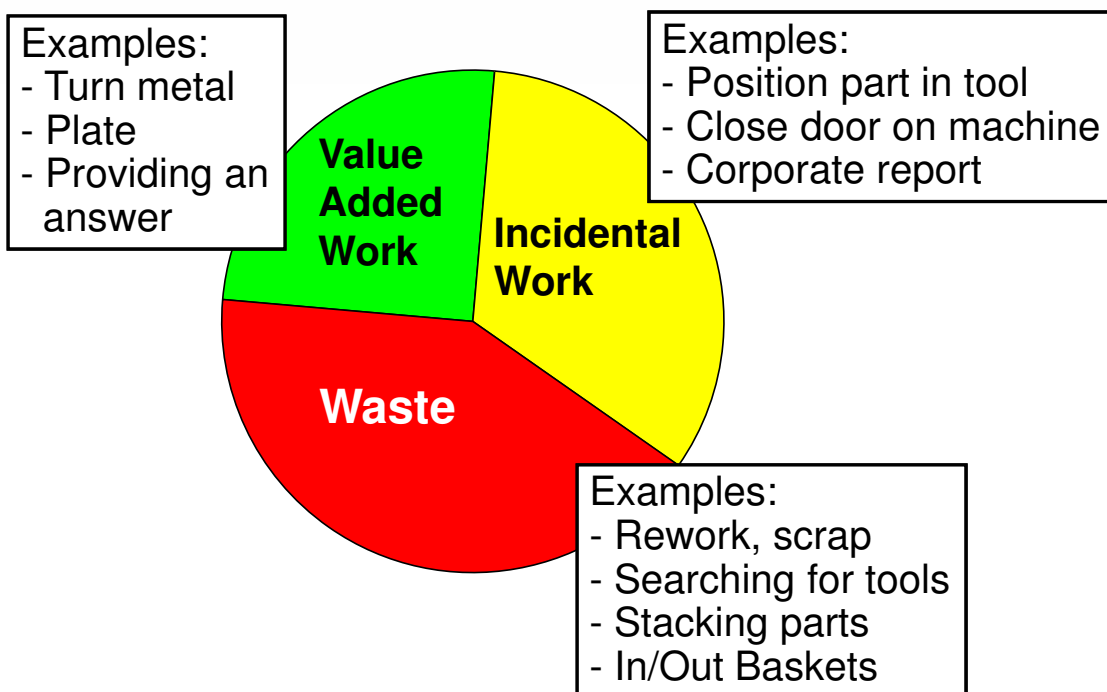
Identify Opportunities

1. The Current-State Map shows what is happening “right now.”
2. It identifies wasteful steps and slow-down causes.
3. It helps visualize how operations can be combined to “flow” production.
4. It lets you see where “pull” systems make sense when the product can't flow.
5. It shows how the improvements impact the value stream.

Flow Through Value Streams

- 80 – 90% of total steps are waste from standpoint of end customer.
- 99.9% of throughput time is wasted time.
- Demand becomes more and more erratic as it moves upstream, imposing major inventory, capacity, and management costs at every level.
- Quality and reliability become worse and worse as we move upstream, imposing major costs downstream.
- Most managers and many production associates expend the majority of their efforts on hand-offs, work-arounds, and logistical complexity.

Value-Added Vs. Waste



Seven Types of Waste - “MUDA”

1. Overproduction
2. Waiting
3. Conveyance
4. Processing
5. Inventory
6. Motion
7. Correction

Three Contributors to Waste

1. Unevenness (Mura)
2. Overburden (Muri)
3. Current Process

Value-Added Time (VAT)

Those things being performed in a process that the customer is willing to pay for

Value-Added Ratio

Value-Added Time ÷ Total Process Time (expressed as a %)

example:

VAT = 10.5 seconds

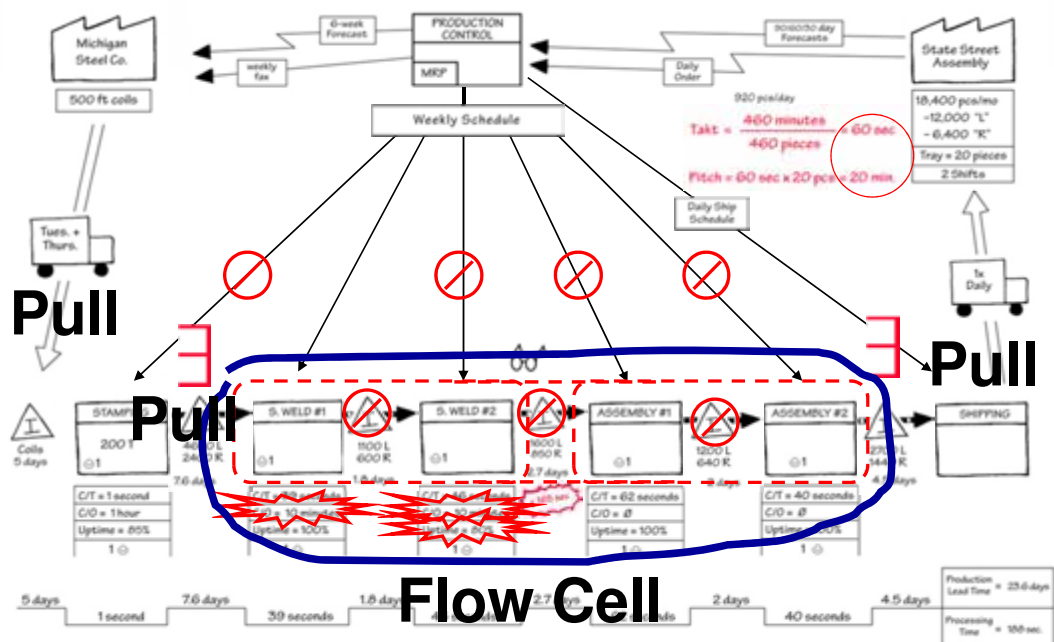
Total process time = 105 seconds

$10.5/105 = .10$ or 10%

Creating a “Lean” Future State

- Step 1** – Eliminate unneeded processes and/or unneeded steps altogether (Question – does this process add value in the eyes of the customer)
- Step 2** – Simplify all processes and process steps before improving them (Question – what is the 20% of this process activity that provides 80% of the value)
- Step 3** – Make the remaining processes stable (predictable and reliable)
- Step 4** – Eliminate the sources of variability and level all inputs
- Step 5** – Eliminate all other waste associated with the remaining process

Transitioning From The Current State





Takt Time

Synchronized Processing Speed

the time required to produce a single component, entire product, diagnostic test, insurance claim, etc. based on sold products/services

$$\text{Takt Time} = \frac{\text{Effective Operating Time per shift}}{\text{Customer Requirement per shift}}$$



Adjusting to Takt Time

Takt time is **customer demand** (*which is hard to change in the short term*)...

...divided into **available production time** (*which you can change*)

1. Number and/or length of shifts and staffing
2. The number of end items produced in the cell
3. The number of cells used to make/process an item

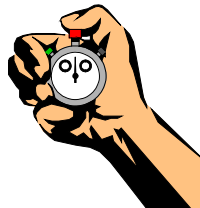
How Cycle Time is Different

Actual time required to process one part or complete a task

Manual work time is the time a worker takes to perform task in a given process including walking, waiting and inspection

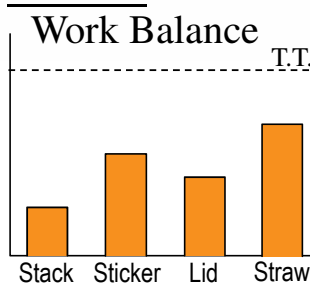
Machine cycle time is the time a machine takes from start up to completion

Usually calculated as an average by clocking several parts/items through the process

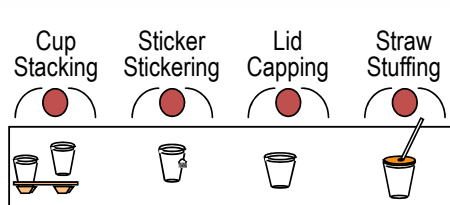


Continuous Flow Example

Before

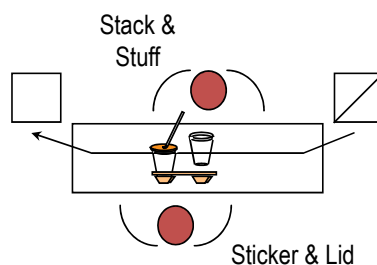
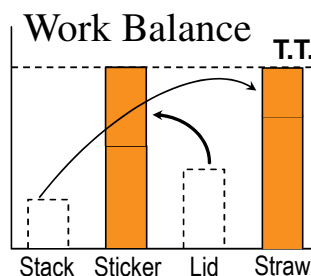


Layout



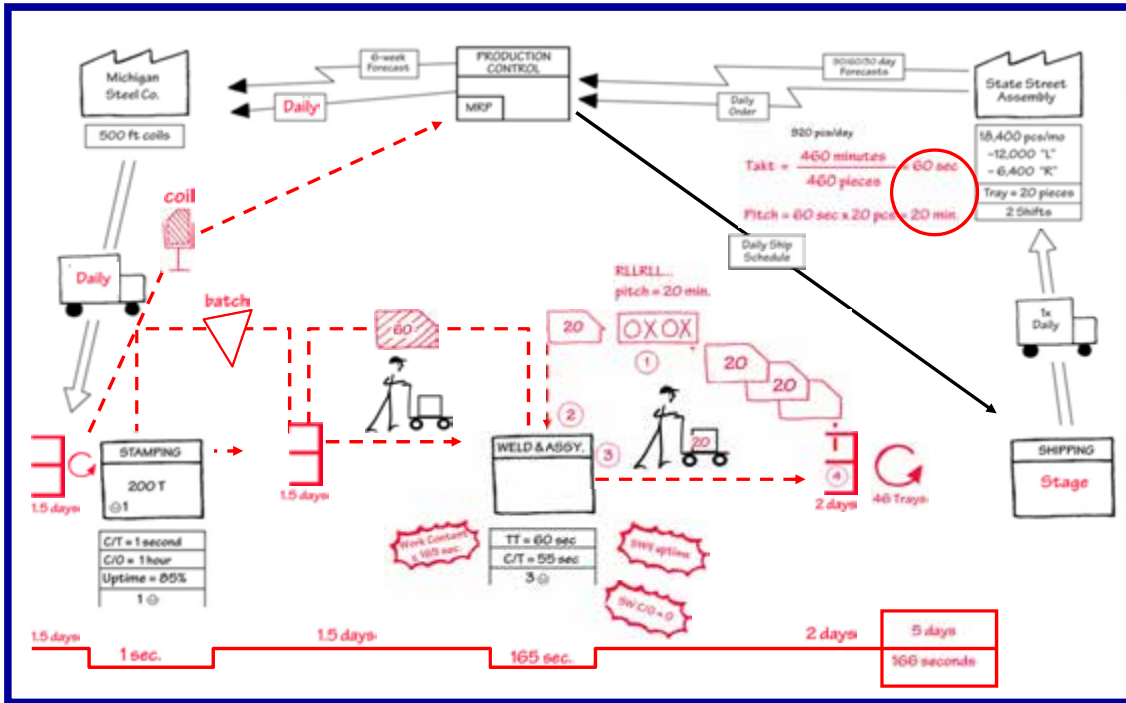
- Unbalanced Workload
- High W.I.P. at various stages of production
- No 1st-In, 1st-Out

After



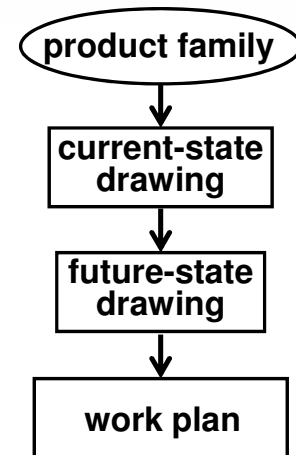
- Balanced Workload
- Standard W.I.P.
- First-In, First-Out

Future-State Value-Stream Map



The Value-Stream Mapping Tool

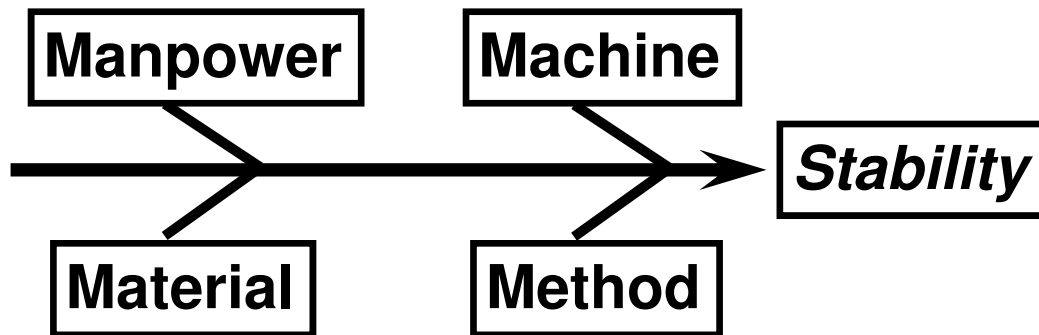
1. Visualizes more than just the single-process shows flow
2. Shows the sources of waste
3. Shows the linkage between information and material flows
4. Gives “door-to-door” view
5. Provides a blueprint for implementation
6. Ties together lean concepts and techniques



Value-Stream Mapping Steps

Stability

- Stability is the foundation of Lean
- Stability is the dependability of the 4 M' s
- Creating basic stability is a key role of supervision/management



Standardized Work

Tool for making quality output

Centered around human activities

Outlines efficient, safe work methods

Helps to eliminate waste

Foundation for kaizen in production

Organizes and defines worker movements

Standard is a basis for comparison

Standardized Work

- Typically made up of three elements:
 - *Takt time*
 - *Working sequence*
 - *Standard in-process stock*
- Provides clear and complete instructions for the operator (visual)
- Organizes work into an orderly method of producing without waste
- Provides worker with method for taking action when something isn't normal

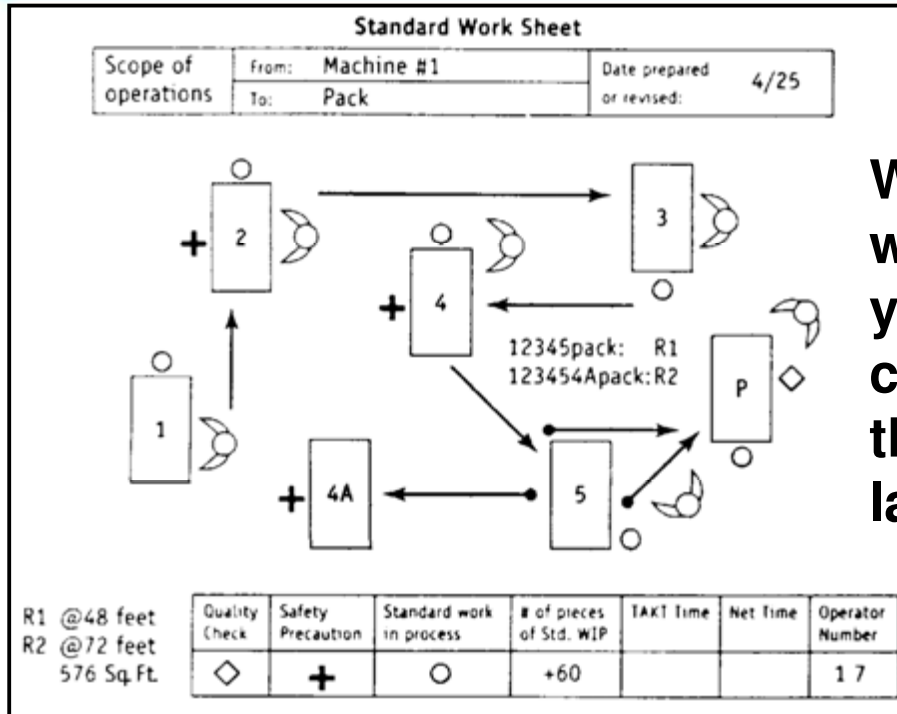


3 Documents of Standardized Work

1. Production capacity sheet
 - *Identifies maximum capacity of each machine*
 - *Helps to identify potential production bottlenecks*
2. Standardized work combination table
 - *Documents flow of human work within a process*
 - *Identifies exact time for each work element (based on takt time)*
 - *Helps detail the interaction between operator and machine*
3. Standardized work chart
 - *Illustrates work sequence and process layout*
 - *Identifies standard in-process stock*
 - *Helps support work site management*



Example of Standard Work Sheet



What would you change in this layout?

Standardized Work

- Exact procedures and standards for a work team
- Documented work sheets
 - *Production capacity for a process (by machine)*
 - *Flow of human work in a process (with times)*
 - *Diagram that illustrates the work sequence*
 - *Step-by-step descriptions of every stage of the work sequence (for new people)*
- Flexible and subject to continuing modification and improvement (kaizen)

Kanban System

Kanban = Sign Board

A tool that signals:

- *What is needed*
- *When it is needed*
- *How much is needed*



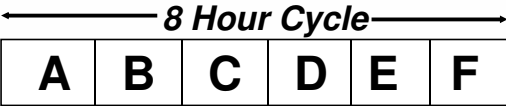
Typical kanban card example

Three Types of Kanbans

- 1. Move kanban:** authorizes a process to get parts from the previous process
- 2. Production kanban:** authorizes the previous process to produce more parts
- 3. Supplier kanban:** authorizes an outside supplier to deliver more parts

Scheduling Batch Processes with Kanban

1. Pattern Production (Cyclic Schedule)
2. Batch Board
3. Triangle Kanban



Trigger Point

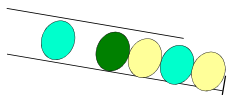


Other Types of Kanban

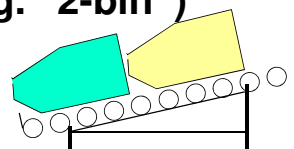
Card



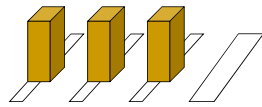
Ball



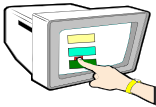
Container (e.g. "2-bin")



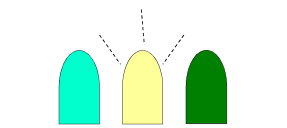
Empty space



Electronic



Light





Heijunka - Production Leveling

1. Level production volume
 - *Even distribution of production over a fixed period of time*
 - Requires uniformity in manpower, material and equipment (stability)
2. Level production variability
 - *Supply chain and customer planning*
3. Timed intervals or sequences
4. Smallest practical quantities
 - *Box quantity vs. Truck quantity*



Results of a Pull System

1. Produces only to true customer demand
2. Provides a visual control of the production system
 - *Material (quantity, type, location)*
 - *Easy to see if you are ahead or behind*
3. Gets all production processes working at the same pace
4. Creates a self-regulating production schedule
5. Identifies problems



Jidoka

Building Quality into the Production Process

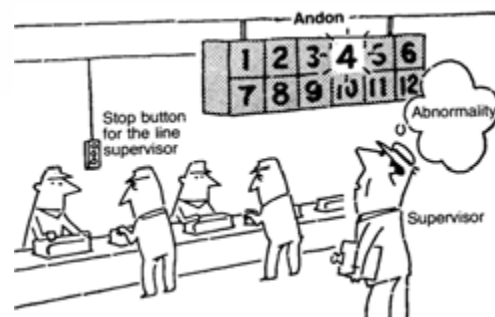
- A humanistic approach to the human-machine interface
- Classic “stop the line” methods for semi-automated production lines
- Fail-safe features built into the machine (Poka Yoke)
- Investing machines with humanlike intelligence



Tools for Jidoka

Andon

- Visual control signal
- Electric light panel which alerts supervisor to a problem
- Line stop indication board
- Line stop cord



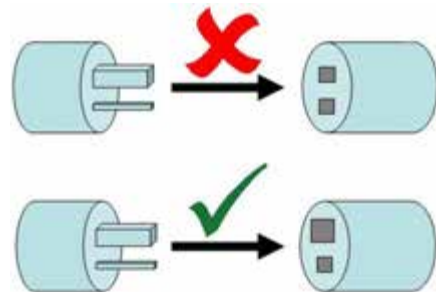
What happens in your organization when an andon is activated?



Tools for Jidoka

Poka Yoke - fail safe devices

- Goal is zero defects
- Inexpensive, Practical
- Easy to use and maintain
- Long term application
- Developed by the workers



5 Steps to Workplace Organization

The 5-S' s are activities that create and maintain stability at the worksite

- Sorting (Seiri)
- Set in Order (Seiton)
- Shine/Clean (Seiso)
- Standardize (Seiketsu)
- Sustain/Discipline (Shitsuke)

5S Implementation

Before:

No organization. Essentially the work bench was a trash pile. It was suppose to be a tool storage location.



After:

Flat surface eliminated and only the necessary items kept and organized.



The Visual Workplace

1. What an employee sees is all that is necessary to manage the job
2. Quality, cost, responsiveness, and safety trends displayed and easily seen from the aisle
3. Critical processes and machines identified
4. All materials and tools identified and located
5. Organization obvious to first time visitors
6. Preventative maintenance under visual control
7. All employees understand visual controls
8. Management at a glance

Visual Control Emphasis

Supervisor following up on supplier delivery



Standardization of material, tools, work procedures



Levelling of work to improve manpower and machine loading



Tracking of actual performance

Visual Management

Daily supervision – simple visual indicators that make abnormal conditions visual

1. Is work output ahead or behind?
2. Are inventory levels at right point?
3. Are machines cycling on time?
4. Are defects occurring?
5. Are suppliers delivering on time?

Management from the isles



Summary

- The purpose of “Visual” controls is to surface abnormal conditions not just to draw lines or put tape on the floor.
- A standard is a basis for comparison not a hard rule to enforce for the sake of “control”
- Determine what types of problems you have in the value stream. Brainstorm how abnormal conditions can be surfaced for quick reaction.
- Good 5S is just good common sense and helps simplify work for everyone as well as brighten up the area
- 5S is the foundation for employee involvement – employees doing it not “it” being done to them



Kaizen – Continuous Improvement

1. Continually improve the process by finding and eliminating waste ***and replacing it with value***
2. Motivate team members to take responsibility for improving their own jobs
3. Develop the philosophy that there is always more to improve
4. Kaizen is about raising the standard of performance (increasing value), not solving performance gap problems

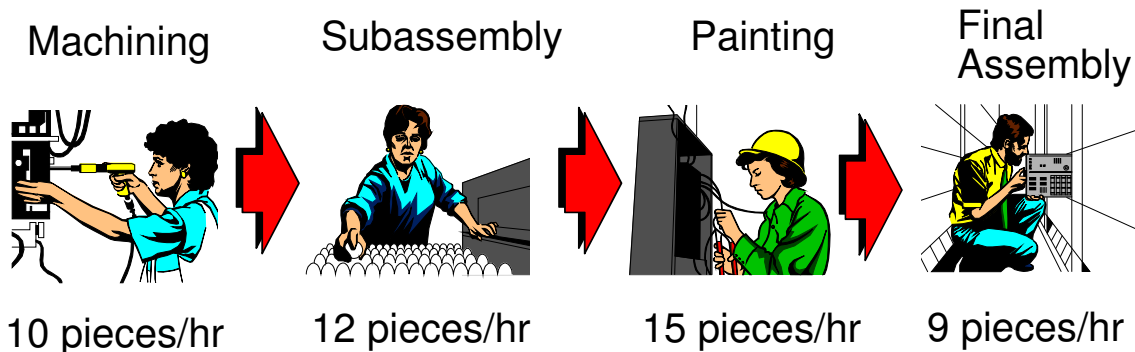
Apparent Efficiency versus True Efficiency

	Before	Kaizen 1	Kaizen 2
Units Produced	480	545	480
Workers	10	10	9
Hours	8	8	8
Total Man Hours	80	80	72
Units/Man Hour	6	6.8	6.7

Customer Demand 480

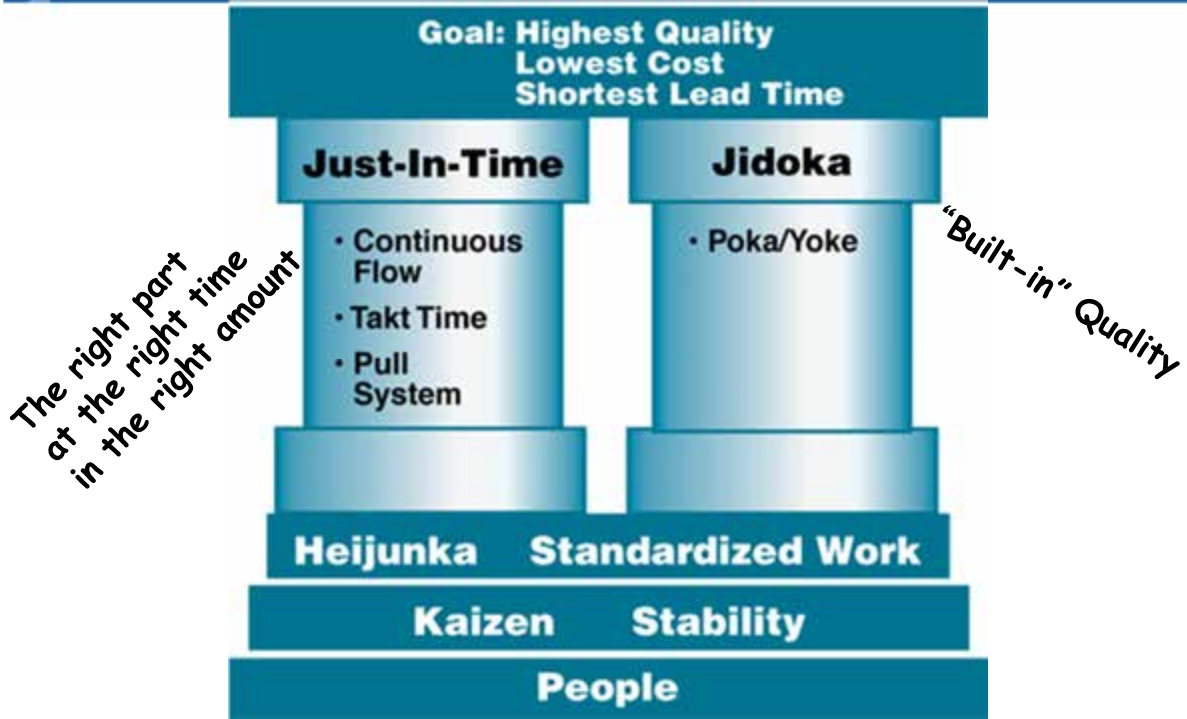
Which Solution is More Productive?

Individual Efficiency Versus Total Efficiency



What is the output (pieces per hour) of this production line?

Toyota Production System



Courtesy of Toyota circa 1990

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Thinking + Tools

Management philosophy and systems designed to support the tools and the thinking

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Determine What is Important

Common Mistakes:

1. Asking the wrong questions
 - “How could we improve?”
 - “What opportunities do we have?”
2. Action Lists – a lot of motion but little progress
3. Jumping to countermeasures too soon

Building a Culture of PDCA

Robust Problem Solving is What Makes the Organization Successful

1. Problems are a good thing
2. Make abnormal from normal visible right now
 - *Helps workers do their jobs well*
 - *Helps workers know when to ask for help*
 - *Helps managers know what questions to ask*
3. Live and teach the scientific method (PDCA) frequent and complete cycles of reflective learning

Providing Purpose - Focus, Discipline, Tenacity



1. Safety
2. Quality
3. Delivery
4. Cost
5. Morale



1. Safety
"Watch your step"
2. Courtesy
Aggressively friendly
3. Show
Appearance, stay in character
4. Efficiency
Improvement ideas



What About Your Organization?

- What are the priorities in your organization?
- How well are they understood by everyone in the organization?



1. Quality → 2. Quantity → 3. Efficiency

*Right product, right quantity, right time **then**
(and only then) work on productivity*

Involve Everyone - Suggestion Systems

- Management provides focus
- Teach people how to find good ideas and how to present them – Supervisor's role
- Let people implement their own ideas
- Record and share the results
- Recognize and reward employees for their contributions
- The purpose is to involve people, engage them and develop their skills



How many implemented suggestions per employee per year are you getting?



Involve Everyone – Quality Circles

- Purpose of Quality Circles is to train employees on PDCA and on how to make good suggestions (positive side effect is problem solving/process improvement)
- Quality Circles are still the primary employee development and involvement process at Toyota today (it is not an old idea past its prime)

Involve Everyone – Problem Solving

- Closing the gaps in performance to standard is the basis for all problem solving (must have a standard)
- The problem solving process is the every day formalization of PDCA (you need a standard process)
- Solving problems is the outcome, involvement and discipline is the purpose

Remember, No Problem is Big Problem Surface abnormal conditions through visual management and use scientific method and discipline to solve problems at the source

Involve Everyone - Daily Work Group Meetings

1. Planned daily meeting with a workgroup
2. Changes behavior a little every day
3. A means of expediting the sharing of information
4. A disciplined approach that drives continuous improvement
5. The primary means of building a “team” feeling
6. Supports the PDCA process and cycle

A Different Role for Supervisors

- How should supervisors spend their time?
- What do supervisors need to be good at?
- What matters most about a supervisor's job?

- Supervisors live and teach PDCA
- Supervisors identify critical processes
- Supervisors create stability of the 4 M's
- Supervisors teach workers how to do the work and support them when they need help

How Well is Your Lean Strategy Working?

- Visual management is weak despite 5S training
- Information flow is chaotic (dozens of reports and charts and even more measures)
- In general, line supervisors and management can't articulate their issues (functional groups are expected to solve problems like quality issues)
- Plant and departmental meetings are long and dull
- Problem solving is sporadic and not very effective
- There is limited evidence of team member involvement
- Customers view you as reliable but not stellar or significantly differentiated



Problem Solving & Good Ideas

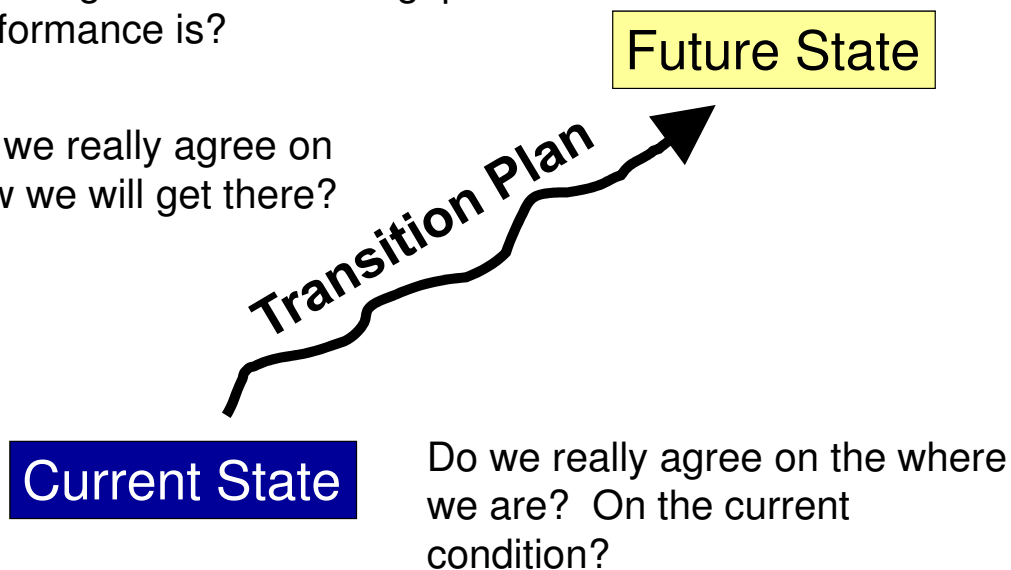
- Why do we struggle to truly solve problems?
- Why do good ideas not live up to their full potential?



Is the Issue Agreement?

Do we really agree on the where we want to go? On what the gap in performance is?

Do we really agree on how we will get there?



How Do We Get Agreement?

Force your perspective



State your case more strongly than others



I've got the data

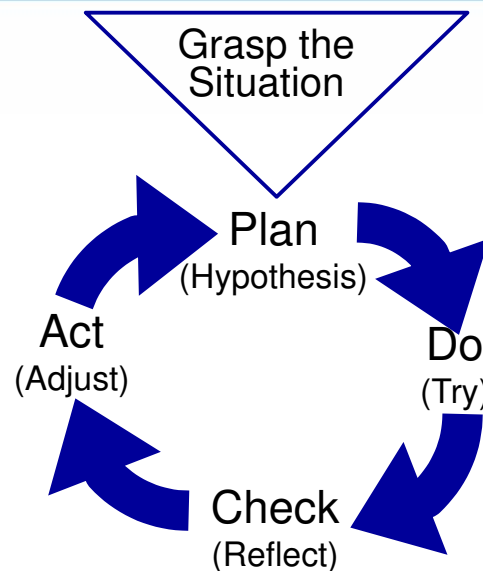
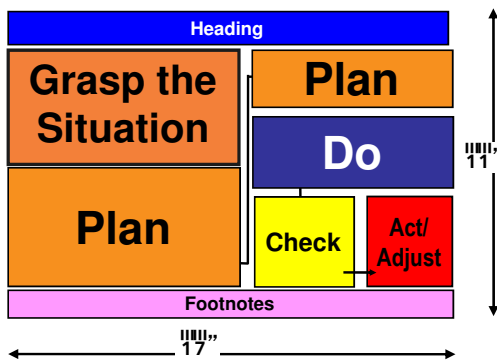
Meeting people into submission



Do the Hard Sell

The A3 Management Discipline

A3 (PDCA) Story Board



Cycles of learning and continuous work process improvement



A3 Discipline

- Stating the issue and why it is important
- Providing background to facilitate understanding
- Current performance and future goals
- Analysis and root cause
- Countermeasures and action plans
- Measurement and adjustment methods



Engagement and Thinking

- Here is how I see things what about you?
- What am I missing?
- What do you think?
- What have you seen?
- How can we go see together?



Engaging Conversations

- Candor
- Disagreement surfaced early
- Informal dialogue
- Getting firsthand understanding
- Taking personalities out of the process



A3 as Good Storytelling

- The A3 must make sense to others
- The link between the actions and the issue need to be based on the facts of the actual situation
- The story must be complete (PDCA), Graphical and Concise
- Your purpose is to get agreement that leads to action (engagement rather than convincing)

Title: What we are talking about

Date:

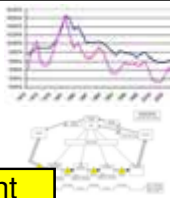
Owner:

Background

Of all our problems, why are we talking about this one? The "ugly story"...
Historical/organizational/business context...

Current Situation

Where do we stand? What is our current performance?
Trend chart, current state value stream map



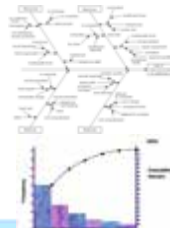
Clear Problem Statement

Goal

What is the target condition or performance improvement you want now? Measurable, by when?

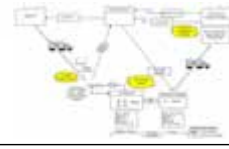
Analysis

What are the root causes of the problem? (Fishbone, 5 Whys, Pareto)
What requirements, constraints and alternatives need to be considered?



Recommendations

What are your proposed countermeasures, strategies, alternatives? Do they link directly to the root cause?
Include options (some needing no resources)
Future State Value Stream Map?



Plan

What, Who, When?

What activities will be required for implementation and who will be responsible for what and when?



Follow - up

How we will know if the actions have the impact needed? What remaining issues can be anticipated? When/how will we follow up?

Reviewed By:

Date:

Focus: Customer Satisfaction **Quality through Standardized Work** **Dept: Quality Assurance**

Performance, gaps, and targets

Last year: COQ target = \$4.00/unit
COQ actual = \$5.20/unit
This year: COQ target = \$4.00/unit

Last year: Customer-service target = 90.0%
Customer-service actual = 87.0%
This year: Customer-service target = 90.0%

Reflection on last year's activities

Activity	Rating	Key results / issues
Trained team leaders in standardized work	R	Target: All processes standardized Actual: < 25% (hot spot: final assembly)
Set targets for defect-proofing per department	K	Target: five per department Actual: less than two "No time," "Maintenance too busy," etc.
Implemented in-service quality data-collection software	G	Quick, easy reports from customers Did not use the information well
Major overhaul of brake ovens	Y	Affected brake quality

Analysis / Justification to this year's activities

Scrap is killing us. Standardized work and error-proofing did not stick. We survived through "heroic" overtime and system runarounds.

We need to improve process capability in each department by:

- 1) Developing standardized work for critical production jobs.
- 2) Retraining all operators in standards and improving versatility.
- 3) Defect-proofing critical processes.
- 4) Developing daily process audits for team leaders and group leaders.

Signatures: _____

This year's action plan

Goals	Activities	J	F	M	A	M	J	J	A	S	O	N	D
A. Standardize all critical production jobs Target: To 20% per department by Sept. 30	1. Retrain team leaders in basic industrial engineering skills 2. Videotape jobs and do time studies 3. Improve standardized work 4. Pilot and adjust based on feedback												
B. Retrain team members and improve versatility Targets: All retraining done by June 30 Two jobs per team member by June 30	1. Develop training schedule and free up trainers 2. Implement practice area in each department 3. Develop versatility charts and hold information session 4. Each department develops versatility plan 5. Implement versatility plans												
C. Improve process capability in each department Targets: Daily process audits by team leaders Defect-proofing five operations per group leader	1. Develop... 2. Pilot... 3. Each... 4. Imple... 5. Set u... 6. Imple... (Mo)												

Followup / Unresolved issues

1. Move to standardized work a mag...
2. May need additional maintenance...
— Secure services of local contra...

Managing to Learn
Using the A3 management process to solve problems, gain agreement, mentor, and lead

by John Shook

Not Your Typical Strategic Plan

- Focus is on big stretch objectives
- Focus is on disruptive issues
- Focus is on big changes to the business and nature of one's competitiveness
- Long-term focus with detailed short term action planning
- Making progress versus working the numbers – no excuses/no blame
- PDCA with big emphasis on Check & Adjust

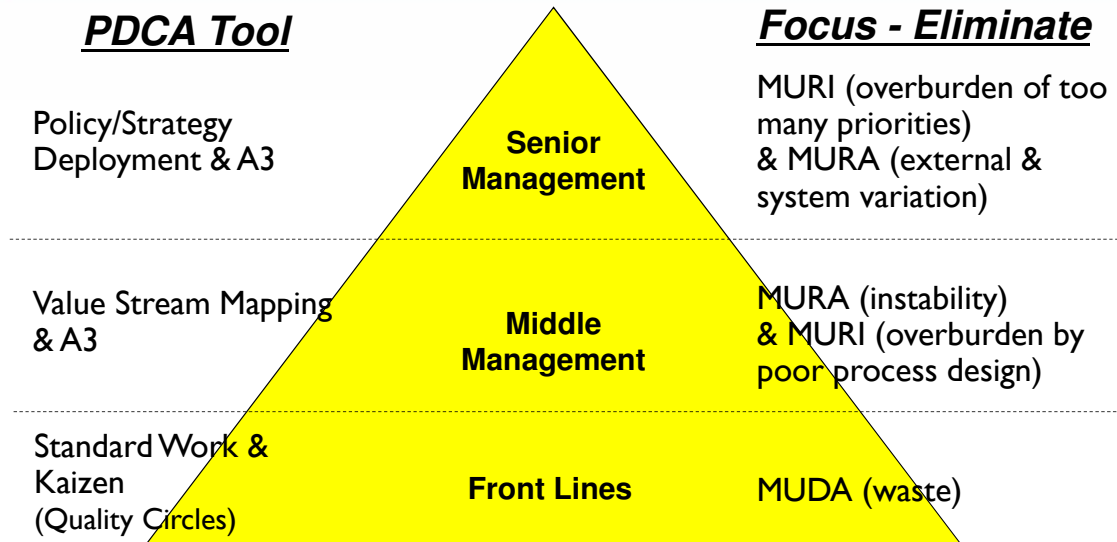
Hoshin Kanri, Policy Deployment & A3s

Policy Deployment Matrix

X			Reorganize by product families		X	X						
	X		Create productivity and quality improvement function	X			X					
X	X	X	Create lean enterprises with suppliers			X			X	X	X	X
Identify value stream by product	Introduce continuous flow and pull	Dramatically improve quality	<p style="text-align: center;">Selected Projects</p> <p style="text-align: center;">Objectives Improvement Targets</p> <p style="text-align: center;">Target Dollar Results (current year)</p>	Perform six major improvement activities per month	Introduce value-stream managers within six months	Form lean enterprises within one year	Improvement Teams					
							Product line reorganization					
							Improvement function team					
							Product family A team					
							Product family B team					
Product family C team												
	X		Reduce inventory by \$30M	X								
		X	Reduce cost of quality by \$15M	X								
	X		Reduce labor costs by \$30M	X								

Source: Womack and Jones 1996, p. 96.

Focus and Tools Vary by Level



Senior Leaders provide vision (the purpose) and narrow focus
 Middle Managers create stability and drive implementation
 Front Line folks continuously improve their jobs and processes

Leading The Change

- **Purpose** – Solve business problems versus do lean
- **Process** – Facilitator/Coach versus Doer/Firefighter
 - Create daily management process to identify issues and assign responsibility (your version of kata)
- **People** – Systematic methods to involve workers
 - Communications (shift meetings, daily kata, gemba walks)
 - Workers keep track of their own performance
 - Teams for improvement and problem solving
 - Implemented ideas as involvement method
 - Building trust by checking
 - Keep responsibility with the worker
 - Teach and live PDCA (the scientific method)

Value-Creating Work of Management

Put in place a process to:

1. Gain agreement on what is important (Strategy Deployment)
2. Deploy strategy and solve problems (A3)
3. Implement standard work with standard management (Gemba Walks)
4. Create the next generation of managers (A3, PDCA)

Where Does One Start??

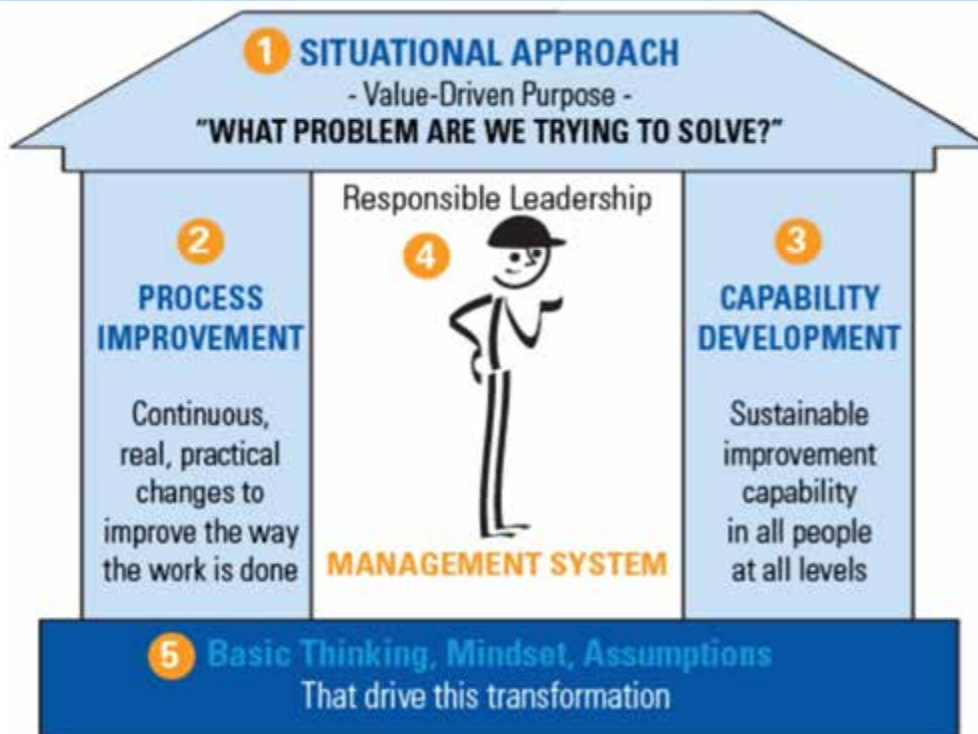
- Take a candid look at the current situation
- Start from need – close a performance gap
- Do what must be done, Not just what you can do (5s, Value Stream Mapping, other tools)
- Change what you can but get to it (small steps)
- Remove the obstacles that keep people from having a good day at work
- Let people make the changes rather than having it done to them

Don't think 5 year journey, think 30-day results!

Please Remember

- The organization needs a simple focus (your version of SQDC)
- Lean tools help to surface problems - there is no magic in the tools
- Problems are good things
- Creating agreement through engagement is the key to timely results
- Being “unreasonable ” is the only way to create real change
- Help people have a good day at work

Lean Enterprise Institute Transformation Framework






Implementation Tips

- Design from the worker out (no extra work)
- One small step at a time (fast experimentation, reflect and adjust)
- Make them think – live and teach PDCA method
- Countermeasures implemented as experiments
- Always focus on need – close a performance gap
- Create learners not experts
- Let the momentum of success overcome resistance
- Never give up



Workshop Feedback

Please fill out the workshop reflection and hand to your instructor. We value your feedback.



Workshop Reflection

Did you meet your learning goals for attending this class?
 If so, what did you learn?
 If not, what prevented you from learning?

What workshop material/activity was most useful?

What workshop material/activity was least useful?

Please evaluate instructor's knowledge and facilitation skills	Excellent	Good	Average	Fair	Poor
()	()	()	()	()	()

Will you recommend this workshop to others in your organization?

What's your next step?

Are you interested in bringing this or any other workshop to your company's site?
 If so, who should we contact?

THANK YOU!
For more information about CEI's Educational programs, please visit www.cei.org
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Don't forget to recycle your name badge at the registration desk

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Faculty members with extensive implementation experience help you learn methodologies for making a critical leap from the conventional business focus on optimizing individual processes to the value-stream focus of optimizing the flow of value. Select courses that address topics ranging from lean fundamentals & tools to lean leadership, culture change, management systems and practices and many more.

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Our plain-language books, workbooks, leadership guides, and training materials reflect the essence of lean thinking -- *doing*. They draw on years of research and real-world experiences from lean transformations in manufacturing and service organizations to give you tools that you can put to work immediately.

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