Lean 101:
An introduction to Lean tools and methodologies

Class objective

Provide a practical demonstration on how the basic Lean tools (7 wastes, 5S, Standard work and the rapid improvement Kaizen event) can transform government operations.

By the end of the course, participants will begin "thinking Lean," that is, thinking in terms of continuously improving processes with Lean tools.
Our Agenda

1. Welcome and introductions
2. What is Lean?
3. 7 wastes
4. 5S – Visual management
5. Standard work
6. Kaizen events
7. Leading a Lean transformation
8. Wrap-up and evaluations

Welcome and introductions

Please share your:
• Name
• Agency and role
• Why are you interested in Lean?
What is Lean?

LEAN is a time-tested set of tools, and an organizational desire, to reduce waste and defects within systems and processes, by engaging your staff to improve productivity, quality, staff morale, and customer service.

What is Lean?

- Refined by/attribution to Toyota Motor Corporation (aka TPS)

- Has now been applied in all sectors, private and public, office and manufacturing
Lean, Six Sigma, TQM????

- All come from common origins of SPC – Statistical Process Control begun in 1920’s
- All focus on continuous process improvement
- All engage those who work in the process to identify and implement process improvements
- All provide tools that can be useful in improving process performance
- Lean has a strong focus on process efficiency, accountability, and a bias for action

Why focus on process?

- Nearly every tangible output; service or product, is created as the result of a process or series of processes (a system).
- It’s been shown that over 85% of the opportunity to improve those outputs, while reducing time and cost lie within the process itself.
“If you can’t describe what you do as a process, you don’t know what you are doing”

W. Edwards Deming
Why Lean, why now?

Public agencies are being asked to do more with smaller budgets and a shrinking workforce.

So how can we continue to provide quality service to our customers?

Lean can help.

How Lean works

- Engages the people who work in the process to improve the process
- Designed to bring measurable and sustainable improvements
- Characterizes activities as value-added or non value-added from the customer’s perspective
- Focus on eliminating the non value-added
Lead or elapsed time

• Lead time is a measure of how quickly we fulfill a request for a product or service

• Lead time can be a strategic measure of competency

• Organizations with the shortest lead time are positioned to be credible and trustworthy

Why focus on lead time?

• When you reduce lead time, you can...
  • Improve productivity
  • Increase responsiveness
  • Improve quality
  • Improve performance
Typically, less than 5% of process time is actually adding value to the service.

What do we do about it?
What do we do about it?

Eliminate the waste so we use our resources to do the value-added work.

Non-value added = waste

Lean = Eliminating Waste

Non-value added:
- Defects, errors
- Overproduction
- Transportation
- Movement
- Waiting
- Over-processing
- Inventory
- Underutilized Resources

*Typically 95 percent of all lead time is non-value added*
How do we define value-added?

Value-added vs. Non-value-added

- Customer is willing to pay for it
- Actually transforms a product or service
- Done correctly the first time
- Consumes resources without creating value for the customer (often CYA)
- Unpredictable – Low first pass yield
- Requires extra time, effort, or resources

Value-added activities

Transform materials and information into products or services per the request of the customer

- Receiving a PO
- Processing a loan
- Calculating a payment
- Determining a grant amount
- Designing
- Programming
Non-value added activities

Operations that consume resources (labor and materials), but don’t transform the product or service

Building a successful Lean transformation
Lean office exercise:
Round 1

Fundamentals of Lean:
The seven wastes +1
How do we identify waste?

Lean defines them as:
- Transportation
- Overproduction
- Motion
- Defects
- Waiting
- Inventory
- Extra processing
- Underutilized creativity

Defects

Any element of a product or service that does not meet or exceed a key customer requirement.
What key requirements do customers have of you?

Customers judge services by:

• Speed – how quickly do I receive it once I request it
• Accuracy – the information is correct, and responded to my request
• Understandable – the information is easy to read and understand
• It is convenient for me to get it – I can get it when I want it, not when you are willing to give it to me
Defects also create:

- Re-work
- Re-inspection
- Employee frustration
- More cost

Transportation

The unnecessary movement of people, information, or materials during a process.
Follow the bouncing paperwork

Waiting

People, parts, systems, or facilities idly waiting for a step in the process to be completed.
Factoid

About 95% of the time that is required to produce a product or service is because of waiting.

Overproduction

Producing more than our customer wants means that we have not allocated our resources appropriately. Also, we are likely producing less of something the customer does want.
Examples of overproduction

• We need 54 copies, but make 60, just in case.
• Print 5000 brochures because the price per piece is cheaper, then inventory, store and finally recycle 2/3 of them.
• Print and distribute forms that frequently change.

Inventory/storage

• Buying and storing more products than the customer needs
• Filing and storing multiple copies of the same document
• Record retention policies
Motion

Any people movement that does not add value to a product or service.

Frequency of use analysis physical files

Distance Carried (feet)

Number of times person accesses file in a day

Where should this item be located?

How about this one?
Extra Processing

Examples:
- Multiple inspections
- Multiple signatures
- Different ways to produce the same product (no standard work)
- Batching

Underutilized creativity

- People who work in the process know the process best.

*But.*
- Do they have the tools, training, and permission to improve it?
Kaizen Toast Video

1. Watch for examples of the eight wastes in the following video.
2. Make a note of what you would do differently if you were making the toast.

Lean office exercise:
Round 2
Fundamentals of Lean:  
5S

What is 5S?

• Methodology for creating a clean, safe, orderly, high performance work environment

• Some companies have added 6th “S” for a safety focus.
The 5 “Ss”

- Sort
- Set In Order
- Shine
- Standardize
- Sustain
After

The numbers game: Round 1
1S

Sort

“When in doubt, move it out.”

Example - Sort

Distinguish between necessary and unnecessary items and information
**1S**

Sort – process steps

1. Identify what to sort
   - Equipment that is no longer needed or does not work
   - Excess office supplies
   - Out-dated data or information
   - Books, catalogs and files that are no longer used

2. Identify where to sort
   - Personal and public workspaces
   - Walkways
   - Closets
   - Desks
   - Tables
   - Cabinets
   - Drawers
   - Communication boards
   - Print, conference and lunch rooms
   - Storage and equipment rooms
1S
How much is enough?

1S
Helpful hints

- Determine if the item is necessary
  - Usefulness
    - Does it function?
    - Do I need it for my job?
  - Frequency of use
  - Quantity needed
- Don’t compromise
- Decorative and personal items
Red Tagging

- Effective activity for sorting
- Tag unneeded items and get rid of them:
  - Recycle
  - Send to a different department
  - Store
  - Send to surplus services
  - Archive (per record retention schedule)
  - Send reusables to State Recycling Center
Electronic files - Sort

- Email
- Files on:
  - Hard drive
  - Personal drive
  - Shared Drive
- Archiving

Shared drive

1. Develop a file structure to include projects, meeting minutes, commonly shared files, etc.
2. Develop a consistent file naming scheme for folders.
3. Assign responsibility to clean out on a monthly basis.
The numbers game: Round 2

Shine

“The best cleaning is to not need cleaning.”
2S
Shine – What is it?

- Cleaning from top to bottom
- Daily maintenance
- Taking preventive measures for ongoing cleanliness

Shine – Why?

- Boost employee morale
- Improve health and safety of employees
- Develop sense of ownership in the office
- Identify and eliminate root causes of cleanliness issues

If a workspace is getting dirty faster than it can be cleaned, the root cause of the problem has not been identified.
Shine – process steps

1. Effective execution
   • Assign areas
   • Develop standard work
   • Set time limits
   • Encourage coordination
   • Ask an objective third party to conduct inspections

Set In Order

“A place for everything, and everything in its place.”
**Set in order – What is it?**

- Organize
- A specific place for everything
- Accessibility
- Procedures to find, return and replenish items.

**Set in order – Why?**

- Immediately recognize items out of place, and an excessive or insufficient amount of items
- Eliminate time wasted locating items
- Improve customer service
**3S** Set in order – process steps

1. Create a standard procedure for organizing and storing material, equipment and information.
2. Organize your work area and common work areas

![Image of organized work area]

**3S** Frequency of use analysis – paper files

Where should this item be located? How about this one?

![Graph showing frequency of use analysis]

Distance Carried (feet)

Frequency of gets and put-aways: Times/Day

- 1. Create a standard procedure for organizing and storing material, equipment and information.
- 2. Organize your work area and common work areas
3S Frequency of use analysis – electronic files

Where should this file be located?

How about this one?

Frequency of use
Times/Month

# of Mouse Clicks to Open File

3S 5S desktop layout example

Customer Files

Applications

Forms

Training Materials
**3S “Set in order” rule of thumb**

- Arrange and label items so that ANYONE can find them.
- **YOU** should be able to find ANYTHING in your office in **30** seconds or less.
- **ANYONE** should be able to find ANYTHING in YOUR office in **60** seconds or less.

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**3S How long would it take you to find what you’re looking for here?**
3S  Versus HERE !!!

3S  Or HERE !!!
Visual management

A communication device that tells, at a glance, how work should be done.

1. Where items belong
2. How many items
3. Standard procedure
4. Work in progress

*There is only one place to put each item*
**Head of Bed Tilt – VAP Bundle**

The little gauge on the side of the bed is fine when you’re 24 inches away.

Everyone who walks past the room and looks in should be able to see an error from the doorway.

There is no reason to assume your first idea will be your best. Pella generated 7 designs before selecting 1.

Additional improvements are possible...

*Presented by the Lean Enterprise Institute*

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**3S**

**Color coding strategy**

- Visually indicates an item’s purpose
- Example: Similar files are color-coded and stored in the same location.
**3S**

**Visual management examples**

- Stock room – labeled and organized
- Stock room – each item labeled and bar-coded for reorder

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**The numbers game:**

**Round 3**
4S

Standardize

“See and recognize what needs to be done.”

4S Standardize – What is it?

- Makes “Sort,” “Set in order” and “Shine” habitual
- Commitment from team members
- Incorporate 5S into regular work routine
4S Standardize – Why?

- Enhances organizational performance
- Employees to develop ideas on improving 5S
- Consistency

4S Standardize – process steps

1. Assign roles and responsibilities
2. Train
Sustain – What is it?

- Effective, ongoing application of 5S in order to improve organizational performance
- Maintaining a commitment to 5S
- Sustaining improvements is the most difficult part

“The less self-discipline you need, the better.”
Sustain – Process steps

1. Communication
   Leaders should:
   - Discuss 5S at meetings
   - Continually express their commitment to 5S
   - Recognize good 5S practices

Sustain – process steps

2. Set goals
   - Action plans
   - Identify resources
   - Accountability
5s

Sustain – Process steps

4. Keep it fun
   • Friendly competition
   • Teamwork
   • Before and after photographs
   • Positive reinforcement
   • Individual recognition or rewards

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Fundamentals of Lean:
Standard work
What comes to mind when you think of standard work?

Standard work is…

- Foundation of Lean
- The safest, highest quality, and most efficient way known to perform a particular task and process
- The only acceptable way to do the task and process
- Continually improved
Standard Work

3 critical elements:

1. Customer demand
2. The most efficient work routine (steps)
3. Cycle times (task and wait time combined)

Standard work exercise

Let’s use what we have learned about standard work to draw a pig!
Why standard work?

• Focuses on the employee, not the equipment or materials

• Reduces variation, increases consistency

• Improvements will not be sustained without it
How could your work benefit from standard work?

The standard work model

1. Define start and end points of the process
2. Determine appropriate standard work requirements
3. Gather required information
4. Create standard work documents
5. Train the supervisor
6. Train employees
7. Ask the 5 questions
8. Run the process and observe results
9. Make adjustments where needed
Step 1: Define start and end points

- Choose part of value stream or process
- Guidelines:
  - Standard work for each key job function
  - Same jobs use same standard work
  - The end point will be the starting point for the next standard work sequence
- Example:
  Start: Receipt of request
  End: Completion of case file

Step 2: Determine appropriate requirements

- Title
- Work area
- Author
- Revision date
- Cycle time
- Work sequence
- Safety requirements
- Approvals
- Document location and ownership
- Standard work in process (WIP)
Step 3: Gather required information

- Look for best practices
- Work sequence
- Cycle time
- Standard WIP
- Quality checks

Step 4: Create standard work documents

**Do:**
- Keep it simple
- Make it accessible
- Easy to read
- Make standard work for each part of the process
- Continually make improvements

**Don’t:**
- Put it in a drawer
- Change processes without changing standard work
- Make it difficult to change
- Give up!
Step 5: Train the supervisor

Step 6: Train the employees

Step 7: Ask the 5 questions

1. Do you understand why you must follow standard work?
2. Are you willing to follow standard work?
3. Can you show me that you can perform the standard work?
4. What are the consequences of choosing not to follow standard work?
5. What is the process for changing standard work?
Step 8: Run the process and observe results

• Look for:
  • Training needs
  • Inadequate processes
  • 7 forms of waste

Step 9: Make adjustments

• Supervisor must approve all changes

“Where there is no standard, there can be no Kaizen.”

Taichi Ohno
Vice-President, Toyota Motor Company
Fundamentals of Lean: Kaizen

Kaizen

- A facilitated, rapid improvement event
- Employee-driven improvements
Kaizen Kaizen Kaizen Kaizen

“To take it apart, and put it back together in a better way.”

Follows Deming’s cycle of Plan, Do, Check, Act (PDCA)

Define the operation to be improved

Plan

Do

Check

Act

Kaizen Kaizen Kaizen Kaizen

Standardsize the operation

Standardsize the operation

Standardsize the operation

Standardsize the operation

Innovate to meet the requirements

Innovate to meet the requirements

Innovate to meet the requirements

Innovate to meet the requirements

Measure the standard operation

Measure the standard operation

Measure the standard operation

Measure the standard operation

Kaizen Kaizen Kaizen Kaizen

The Kaizen event

3-5 day improvement event in which a team:

• Maps a current process
• Identifies waste
• Brainstorms improvements
• Maps future process
• Assigns tasks
Kaizen

Kaizen events use the swim lane mapping technique to map the current and future processes.

Swim lane mapping

Three elements:

- Time
- People (job functions)
- Tasks/Process
People (job functions)

Icons

Task

Time to Complete (in min.)

DECISION (Y or N)
Building a swim lane map

Customer Calls in order.

Customer Service sends e-mail to Sales

Sales person is assigned to order and delivers paper copy of order to Order Entry

An electronic order is sent to the supplier.

Order is now entered into the company's database.

Swim Lane Mapping Metrics

DHS kaizen

Invoicing

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95% Improvement
## DOC – Comparison Metrics

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### Fundamentals of Lean: Leadership
Leading a Lean transformation

A leader’s role in implementing and sustaining continuous process improvement

Summary

- Continuous improvement (CI) yields:
  - Improved service delivery
  - Improved employee morale
  - Increased capacity

- To create and sustain a CI culture requires the knowledge and commitment of the leaders of the organization.
“Leadership is an action… not a position.”

Donald H. McGannon

“If your actions inspire others to learn more, do more, or become more, you are a leader”

John Quincy Adams
Managers and Leaders

- **Managers** keep the train running on time toward an established destination.

- **Leaders** determine what the appropriate destination is and create an environment where employees have the permission and support to help figure out the best ways to get there.

“If you don’t know where you are going, you will wind up somewhere else.”

- Yogi Berra
Is it improvement or just change?

“All the empowered, motivated, teemed-up, self-directed, incentivized, accountable, re-engineered, reorganized, or reinvented people you can muster, cannot compensate for a dysfunctional system.”

Peter Scholtes
The Leader’s Handbook

“Making change is easy… making improvement is hard.”

Ferdinand Porsche
Implementing Lean

Lean is a set of tools, but more importantly it is a philosophy that leaders must learn, exhibit and communicate to create and sustain a culture of continuous process improvement.

Creating a culture

Changing habits, behavior and the way people think
Culture exists on three levels

- Espoused values – what leaders say
- Artifacts – what leaders do
- Assumptions – the unwritten rules that evolve from a combination of espoused values and artifacts

We change culture by action at the top two levels

Espoused values

“What do we tell our people”

- What you say matters.
- How you say it matters.
- Bringing about a transformation of culture is not the business of a program; it’s the business of leaders.
- What are your personal core values? Do others know what they are?
- Leaders should be predictable; when questions arise, staff should have a pretty good idea what you will say.

You won’t change culture flying under the radar
Artifacts

“What do people see?”

- Action – Do your actions match your words?
- Accountability – Do you hold yourself accountable? Do you hold others accountable for those things that are their responsibility?
- Role-modeling - Do you demonstrate the behavior you expect from your colleagues and co-workers?
- When something goes wrong, do you examine the process first, or immediately look for “who screwed up?”
- What types of people get promoted?

Shared assumptions

“Our culture really is..”

- This is the most powerful level of culture
- Unwritten rules are very slow to change
- Change comes from consistent, meaningful espoused values, and different behaviors
- The change you want to see in your area of influence starts with you.
Changing assumptions

1. Adults are big kids – role-model the behavior you hope to see from those around you.
2. If something goes wrong, first understand what in the process may have contributed to it.
3. Stop being Ranger Rick, and start being Smokey Bear.
4. Be substantially dissatisfied with the status quo.
5. Leaders must learn, do, and teach.

Changing assumptions

6. Apply the 5 ‘whys’
7. Say ‘no’ to ‘yes’ people (if all 8 of us always agree, we have 7 too many people in the room).
8. Hold people accountable – stop enabling bad behavior.
9. Hire, keep and promote thoughtful risk takers.
10. Be courageous – drive out fear.
“The greatest barrier to success is the fear of failure”

Sven Goran Ericksson

Summary and conclusion

• How the 7 wastes, 5S, standard work, and Kaizen support a Lean transformation
• Next steps
• Questions?