A Better, Faster, Stronger Government Starts with You

Introduction to Continuous Improvement

Improving Minnesota government every day

Learn how you can join the ranks at mn.gov/CI

Brought to you by the MN Office of Continuous Improvement
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Simulation Exercise Information: Department of Permitting (DOP)

Simulation Roles:

- Director (instructor)
- 1 Administrator
- 4 Technicians
- 1 Supervisor
- 1 Materials Coordinator
- 1 Customer
- Observers

Comments:

- Consider the “dots” to represent a business step such as a Legal or Financial Review.
- Expect some unknowns and a bit of ambiguity and the first round may be a bit chaotic ...
- Expect to see processes or layout that might need to be improved ... just like in real life!

**Minnesota Statutes XYZ Regulation on Permitting**

Every permit shall be on a yellow post-it note with 2 red dots, 2 green dots, 1 yellow dot, and 1 blue dot. The yellow dot shall go in the lower left, the red dots shall go in the middle, the blue dot shall go in the upper right, and the green dots shall go in the two remaining quadrants. The yellow dot must be placed first, followed by the two red dots, followed by the blue dot, followed by the green dots. Failure to produce the permit as outlined above shall be punished pursuant to Minnesota Law.

**Round 1**

- 5 minutes
- Create permits in batches of 5
- Complete as many permits as possible
- Only Materials Coordinator moves materials
- Stick to your role (don’t change the process)
What is Continuous Improvement?

Continuous improvement (CI) is an ongoing effort to improve products, services, and processes.

**CI Values/Principles**

- **Customer Focus**
  Design and improve services based on customer needs and preferences. Provide what customers want, when they want it, and how they want it.

- **Data Driven Decisions**
  Base decisions on data and analysis rather than anecdote or intuition. Validate results with data.

- **Focus on Results**
  Set specific, measurable, achievable, relevant, and time-bound (SMART) goals, measure and communicate performance, and follow through on commitments.

- **Respect**
  Unleash the knowledge, experience, and creativity of employees to improve processes, products, and services. Develop processes for employee success.

- **Performance Excellence**
  Challenge the status quo, adapt and apply best practices, innovate, and learn from experience.

**CI Approaches**

High performing organizations use multiple improvement approaches. Some more common approaches include:

- Lean
- Six Sigma
- WorkOut
- Business Process Management (BPM)
- Total Quality Management (TQM)
- Balanced Scorecard
- Baldrige
- DFSS

**Key elements of a CI Culture**

- Leaders who model CI principles in their words and actions (Learn-Do-Coach)
- Employee desire to deliver the best products and services to customers
- Openness to learning and change
- Knowledge, expertise, and resources to engage in CI
- Taking action to improve performance – emphasis is on action!
- Measuring, communicating, and recognizing CI efforts
A Cycle of Improvement

CI isn’t about instant perfection. It’s about ongoing action to improve performance using Plan-Do-Study-Act, or PDSA.

The PDSA cycle is based on the Scientific Method, in which you have a hypothesis, test it, study the results, adjust your hypothesis, and repeat the cycle as needed.

With a CI project, you plan an improvement, implement changes, study whether the changes achieved desired results, make adjustments as needed, and start the process again.

The “Ideal” Process

Strive to achieve the Ideal process. The Ideal process maximizes customer value by minimizing inefficiencies or process wastes. The Ideal process is completed:

- By one person
- One at a time (no batching)
- As soon as the request is made
- Without interruption (continuous flow from one task to the next)
- With the information provided
- Correctly the first time (without errors or defects)

A CI Toolbox

Build your CI toolbox by picking the tools that meet your needs, and adapting them to your situation and challenges.
## Identifying and Removing Process Waste

The first step - and sometimes the most difficult - is seeing the waste!

### Defects

- **Examples**
  - Data errors, typos, and lost records
  - Delivering information or materials to the wrong location
  - Missing or incomplete information on forms

### Overproduction

- **Examples**
  - More staff working or attending meetings than needed
  - Doing work not required
  - Sending unnecessary emails

### Waiting

- **Examples**
  - Approval queues
  - Waiting for decisions or services
  - Waiting for customer information, supplies, or copies

### Non-Utilized Staff

- **Examples**
  - Skills, creativity, and talents not used because of inappropriate people, or equipment is not ready

### Wasting

- **Examples**
  - Materials or supplies lost
  - Documents not sent
  - Overtime

### Too Many Steps

- **Examples**
  - Too many rewrites
  - Too many approvals

### Problems and Unraveling of Plans

- **Examples**
  - Not having a plan
  - Not having a clear goal

### Lacking a Performance Measure

- **Examples**
  - No feedback
  - No performance measure

### Lack of Knowledge or Skills

- **Examples**
  - Not understanding processes
  - Not understanding equipment

### Typical Causes

- **Examples**
  - Missing and incorrect information
  - Unclear or confusing processes
  - Unclear roles and responsibilities

### Solutions

- **Examples**
  - Apply problem solving tools
  - Verify customer requirements and align process with requirements

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The effort involved in inspecting for defects, identifying non-value added steps, and removing waste is essential for continuous improvement.
Transportation

Moving products, equipment, materials, information, or people from one place to another.

Examples
- Routing documents
- Paperwork hand-offs
- Carrying or retrieving files
- Transporting patients
- Site inspections

Motion

Unnecessary movement of workers

Examples
- Trips to copier
- Looking through cabinets for needed supplies
- Walking to find people
- Extraneous movements of workers

Inventory/Storage

Unnecessary storage of information and materials or more information and materials than is needed.

Examples
- Storing the same document in many places
- Backlog (work in process)
- Obsolete databases/files/folders
- Unread or undeleted emails
- Supplies you do not use

Typical Causes
- Bureaucratic language
- Re-entering or checking data
- Excess paperwork
- Excess inventories
- Duplication of effort
- Using data that is not needed

Solutions
- Use one-step process flow
- Use efficient process requirements for co-locate work
- Leverage technology
- Analyze data to determine root causes
- Do not over order
- Investigate variations in the time it takes employees to perform the same task (takt time)
- Don't over order
- Collect data to understand what orders or shifts/roles are responsible for
- Schedule to even out workload
- Poor planning and communication
- Not leveraging technology
- Over-ordering

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Solutions
- Use one-step process flow
- Use efficient process requirements for co-locate work
- Leverage technology
- Apply "Plain Language"
- Automate where appropriate
- Collect data to understand what orders or shifts/roles are responsible for
- Schedule to even out workload
- Poor planning and communication
- Not leveraging technology
- Over-ordering
### Process Issues and Solutions

<table>
<thead>
<tr>
<th>Process Issues</th>
<th>Solutions</th>
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| **Missing Information** | • Require all information from the customer before the job launches (don’t enable bad behavior)  
                          • Put in hard stops that don’t allow partial information (e.g., online hotel reservations) |
| **Wrong Information**   | • Use menus where a small number of choices exist  
                          • Only collect the information you need  
                          • Clearly define the information you need  
                          • Create a review process with the customer before the job launches  
                          • Create and report on measurements for information accuracy |
| **Assumptions**         | • Get the right information at the right time  
                          • Automate forms or applications and require all fields to be completed before information can be submitted |
| **Poor Information Flow** | • Eliminate non-value added steps  
                          • Eliminate or reduce batching  
                          • Combine tasks or functions to reduce handoffs and waits  
                          • Ask and challenge responses to “Can fewer people perform more steps in the process?”  
                          • Shift roles and responsibilities to address high service flow (e.g., “Bus!”)  
                          • Give permission and provide training for people to take on more steps in the process  
                          • Identify parts of the process that can be done at the same time (concurrent)  
                          • Provide clear guidance (i.e., standard work)  
                          • Make sure clear, accurate information is gathered at the earliest possible step in the process  
                          • If the structure is creating information silos, clarify process requirements for those upstream and downstream. Also move people closer together to enhance communication and collaboration  
                          • Co-locate work to reduce motion and transportation  
                          • Investigate and address significant variations in the time it takes employees to perform the same task (takt time)  
                          • Solve the root cause of problems  
                          • Automate process steps where possible and appropriate |

* Batch is when we wait for a certain amount of items (i.e., batch) or time before performing the next step in the process. Batch is effective when there is a high “switching cost” in setup time between activities and larger runs reduce unit cost. In most instances, batching increases wait time for customers, because it holds up work that is ready to move to the next process step. Batch is a non-value added activity and often leads to additional non-value added activities to keep track of batches.
## CI Concepts & Tools

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<th>How does it work?</th>
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<td><strong>5S</strong></td>
<td>Provides a method for eliminating waste that results from a poorly organized work area (e.g., wasting time looking for information/documents).</td>
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</tbody>
</table>
| A method to organize work areas.  
1. Sort (remove what is not needed)  
2. Set in Order (organize needed items)  
3. Shine (clean work area)  
4. Standardize (write standards for above steps)  
5. Sustain (regularly apply the standards) | |
| **8 Wastes** | Once you understand the 8 wastes, you are better able to see them in your processes and take actions to remove them. |
| Descriptions of non-value added components in our work processes. Wastes include: **Defects**, **Overproduction**, **Waiting**, **Non-utilized staff talent**, **Transportation**, **Inventory**, **Motion**, and **Extra processing.** | |
| **A3** | An A3 is a simple tool for planning, communicating, and ensuring your project follows the PDSA methodology. |
| A one-page document used to understand and solve a problem or plan and communicate an improvement project. An A3 incorporates PDSA and refers to the paper size (11”x17”). | |
| **Batching** | Batching is effective when there is a high switching cost or set up time between process steps so you “batch” to reduce unit costs, such as time needed to access a data system. |
| Batching is when we wait for a certain amount of items (i.e., batch) or time before performing the next step in the process. In most instances, batching increases wait time for customers, because it holds up work that is ready to move to the next process step. | |
| **Kaizen** | Kaizen events are typically led by a neutral facilitator over the course of one to five days. The facilitator leads a team in: |
| Kaizen is a Japanese word that translates to “continuous improvement.” It most often refers to an event during which employees rapidly improve a process using CI tools. Kaizen emphasizes the empowerment of all employees to suggest and implement process improvements. | 1. Mapping an existing process  
2. Identifying the waste in the process  
3. Brainstorming improvements  
4. Mapping out a new, improved process  
5. Developing an action plan to implement the new process |
| **Lean** | 1. Specifies value from the customer standpoint.  
2. Eliminates process steps that do not add value.  
3. Achieves tight sequence between process steps so the product or service flows smoothly toward the customer (one-piece flow).  
4. Allows customers to pull value from the process versus having the process pushed to them (e.g., customer can order their license online versus having to come to a physical location with limited service hours).  
5. Follows PDSA until the *Ideal* (no-waste) process is created. |
| A method, set of tools, and mindset for improving work areas and processes by eliminating waste. Lean strives to create the *Ideal Process*. The Ideal process is:  
• Completed by one person  
• Completed one at a time (no batching)  
• Completed as soon as the request is made  
• Completed without interruption (continuous flow)  
• Completed with the information provided  
• Completed correctly the first time – no errors or defects | |
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| PDSA                | The Lean methodology (Deming Cycle):  
• Plan (establish plan and expected results)  
• Do (implement plan)  
• Study/Check (verify results achieved)  
• Act (review and assess; do it again)  
Applies a scientific approach to making improvements. The iterative process ensures learning is captured and improvements are continuous. |
| Poka-Yoke           | Design error detection and prevention into production processes with the goal of achieving zero defects. Eliminates errors through design, which saves resources in looking for and fixing errors later in the process. |
| Process Mapping     | A technique to document the sequence and flow of steps in a process. Helps you see how current work is done, and allows you to identify wastes and value added process steps. |
| Process Measures    | Metrics that tell you how well you are doing and if operations are functioning properly. Process measures make it possible to set goals, evaluate if strategies are achieving desired results, and communicate results. |
| Root Cause Analysis | A problem solving approach that resolves the underlying causes of a problem, instead of applying quick fixes to visible symptoms. Some typical root cause analysis tools are 5 Whys, fishbone diagram, and affinity and relations diagrams. Helps to ensure that a problem is eliminated by applying solutions or corrective measures to the “root cause” of the problem. A common approach is to ask why five times – each time moving a step closer to discovering the true underlying problem. |
| SIPOC Diagram       | A tool used to identify high-level, relevant elements of a process improvement project. SIPOC is an acronym for: Suppliers, Inputs, Process, Outputs, and Customers. It is a valuable tool for scoping a Kaizen event or problem solving project. |
| Six Sigma           | An approach for reducing process errors and variation using improvement experts, a structured method, performance measures, and tools. Six Sigma refers to a goal of 3.4 defects per million units produced. Six Sigma is a great approach for complex improvement projects. Six Sigma follows the DMAIC method: Define, Measure, Analyze, Improve, and Control. |
| Standard Work       | Documented procedures that capture current best practices (including the sequence and time to complete each task). Standardized work is living documentation of how the work should be done (it continually evolves through Kaizen). Standardized work helps maintain service quality, provides a baseline for future improvement activities, and allows easier onboarding of staff. |
| Visual Management   | Visual signals to communicate information needed to make business decisions. This mapping can identify wastes or areas requiring further analysis. Visual management makes the state and condition of processes easily accessible and clear to everyone. The meters and gauges on a car dashboard are a common example. |
| Voice of the Customer | The needs, expectations, and service preferences of customers. Helps in the design and delivery of products/services and assessing performance. During a WorkOut the team:  
1. Defines processes for delivering services  
2. Identifies process challenges and barriers  
3. Brainstorms solutions  
4. Sorts and prioritizes solutions |
| WorkOut             | A method for managers and teams to identify and prioritize opportunities for improvement. A WorkOut is typically completed in a half-day session led by a neutral facilitator. |

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