10 Steps to become a
Lean Enterprise

Lean Expert Training Course

Step 9
Continuous Process Improvement

Part 2

Lean Expert Course Workbook – Step 9 Continuous Process Improvement Part 2

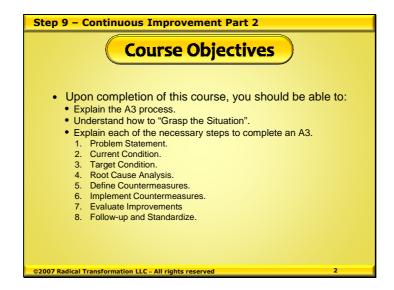## Table of Contents

Welcome

We would like to welcome you back to our next module in this online training course.

This training module is called "Step 9 – Continuous Improvement Part 2."

This module is a continuation of our Lean Expert online course series called "10 steps to become a Lean Enterprise."

This program has been specifically designed to demonstrate our step by step methodology that will allow any organization to become a Lean Enterprise.

Let's continue your lean journey!

Lean Expert Course Workbook – Step 9 Continuous Process Improvement Part 2
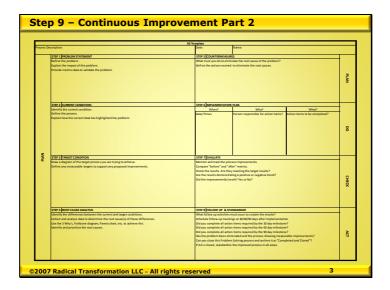
Course Objectives

Here are the course objectives for Step 9 – Continuous Improvement Part 2.

We specially designed this course to give the information you need to get a full understanding of each step required to become a Lean Enterprise.

Upon completion of this course, you should be able to:

- Explain the A3 process.

- Understand how to "Grasp the Situation".

- Explain each of the necessary steps to complete an A3.

    1. Problem Statement.

    2. Current Condition.

    3. Target Condition.

    4. Root Cause Analysis.

    5. Define Countermeasures.

    6. Implement Countermeasures.

    7. Evaluate Improvements.

    8. Follow-up and Standardize.

Now we are going to work through each course objective.

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A3 Example

In this screen you can see the A3 template from Step 9 – Continuous Improvement Part 1. It is important to understand how to use this document because it is one of the most important tools used by any Lean Enterprise.

It is an integral part of their Continuous Process Improvement (CPI).

Remember: There is a specific sequence to completing an A3, which is Step 6, 7 and 8 cannot be completed until Steps 1, 2, 3, 4 and 5 have been completed first.

A team will move backwards and forwards between Steps 1 through Step 5 to make sure the relevant data and information has been noted.
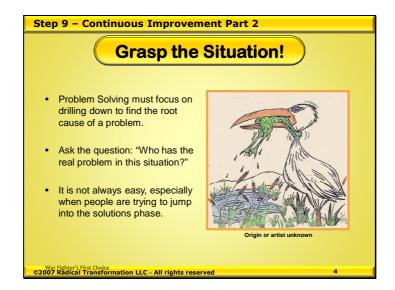
The PDCA Cycle follows the same sequence, first PLAN, then DO followed by CHECK and finally ACT.

Another important point to understand about the A3 format is the connection between Step 1 – Problem Statement and Step 5 – Countermeasures.

Once Step 5 has been completed the key question to ask is: If we implement these countermeasures will they eliminate the original problem identified in Step 1? It should be a clear Yes or No.

One can ask the same question to test the process between all of the steps from 1 through 5.

Another example is: If we eliminate the root causes identified in Step 4, will it achieve the target condition identified in Step 3.

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Grasping the Situation

The first step in any process is to observe and learn about the situation to understand the issue.

We call this "Grasping the Situation". It is very important to take the time to do this before jumping into action only to realize you fixed the wrong thing.

An improvement team will need to start with this process and then move onto the each of the steps identified in the A3.

Problem Solving must focus on drilling down to find the root cause of a problem.

Ask the question: "Who has the real problem in this situation?"

In this screen is a picture, which is demonstrating in a light hearted way that it is not always easy to understand who has the actual problem.

It is important for a team to take a little extra time to observe the process and try to determine the true nature of the problem.

It is not always easy, especially when people are trying to jump into the solutions phase.
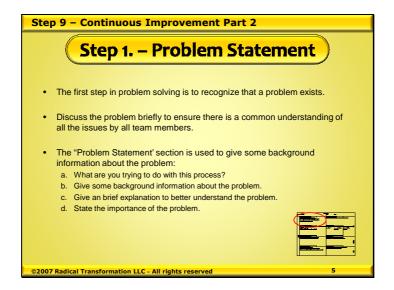
The problem, whenever possible should be identified using data and information.

It should never be based on the opinions of people because everyone has a different viewpoint.

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Using an interviewing technique to collect information from people is a good way of drilling down, but data must be used to identify and evaluate the problem.

A team cannot solve problems by sitting in an office or conference room.

They must go see the place where the problems exist and practice Genchi Genbutsu!

Step 1 – Problem Statement

The first step in problem solving is to recognize that a problem exists.

This may seem obvious but it is important to get everyone involved to recognize there is a problem.

Allow all the team members to have a brief discussion about the problem to ensure there is a common understanding of all the issues.
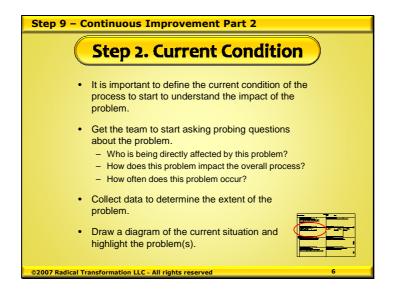
The "Problem Statement' section is used to give information about the problem:

- What are you trying to do with this process?
- Give some background information about the problem.
- Give a brief explanation to better understand the problem.
- State the importance of the problem.

In the previous screen, we discussed practicing Genchi Genbutsu.

This can be interpreted and following the three actual rules:

- Go to the "*Actual"* place of work.
- See the "*Actual"* problem for yourself.
- Talk to the "*Actual"* people involved.

Step 2 – Current Condition

When Step 1 – Problem Statement has been completed and the team has clearly defined the problem, the next step is to take a look at the current condition.

It is important to move into Step 2 to start to define the current condition of the process to start to understand the impact of the problem.

This step will still need the team to continue practicing Genchi Genbutsu and the three actual rules from the previous screen.

The team will need to start asking probing questions about the problem, such as:
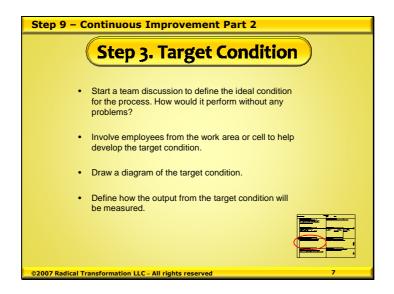
- Who is being directly affected by this problem?
- How does this problem impact the overall process?
- How often does this problem occur?

During the time a team members are in the location where the problem is occurring they can collect data.

This data will be analyzed to determine the extent and cause of the problem in Step 4 – Root Cause Analysis.

The team can draw a diagram of the current situation and highlight the location of the problem(s).

The purpose of Step 2 is to give a clear explanation of the current condition or environment where the problem is occurring.

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Step 3 – Target Condition

In Step 3 the team must focus on the goal or outcome of the problem solving process.

What are they trying to achieve?

What is an acceptable level of performance for the observed process?

Start a team discussion to define what the target condition would look like for the process.

The outcome of this discussion is to find the answer to a question:

How would the process perform without the problem that was defined in Step 1 – Problem Statement?
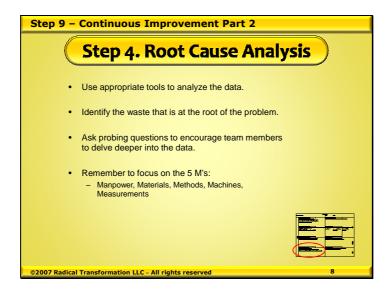
It is necessary to involve employees from the work area or cell to help develop the target condition. They work in the area and they will be able to provide insight and information about a target condition that they would like to see.

Get the team to draw a diagram of the target condition to demonstrate how it would perform without the problem.

While doing this, the team defines how the output from the target condition will be measured.

Let us take a moment to re-cap. In Step 1 we defined the problem. In Step 2 we defined the current condition of the work area experiencing the problem.

In Step 3 we define the target or goal condition for the work area without the problem.

Step 4 – Root Cause Analysis

In Step 4 the team will take the information collected during Steps 1, 2 and 3, then compare and analyze it to try to find the root cause(s) of the problem.

To do this effectively they need to use appropriate tools to analyze the data:

 e.g. Fishbone Diagram, Flow Chart, Pareto Chart, 5 Why's, etc.

The purpose of root cause analysis is to try to identify the waste in the process that is at the root of the problem.

It is important for the team members to ask probing questions to delve deeper into the data.

Remember to use the 5 Whys, it can help the team drill down into the data to find the root cause(s) of the problem.

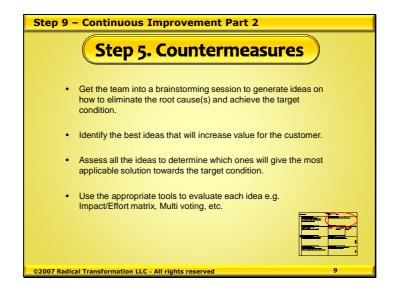It is important for the team to find the root cause and not get distracted or end up being side-tracked by a symptom of the problem.

Remember to focus on the 5 M's:

- Manpower.
- Materials.
- Methods,
- Machines.
- Measurements.

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The root cause of the problem will come from one or more of the 5 M's.

A Cause and Effect (or Fishbone) Diagram is an excellent tool to use to work through the 5M's.

Step 5 – Identify Countermeasures

When the team has discovered the root cause of the problem they can proceed to Step 5 – Identify Countermeasures.

The main question to be answered in Step 5 is:

What must change to eliminate the root cause of the problem and to achieve the target condition?

At this point the team will need to come together with employees from the work area.

Start a team brainstorming session to generate ideas about how to eliminate the root cause(s) and achieve the target condition.

Remember, there are no bad ideas at this point, any idea, from anyone in the room are acceptable.

Write the ideas onto post-its or a flip chart to capture them. Next group the ideas into main categories.

Identify the best ideas that will increase value for the customer.

Assess all the ideas to determine which ones will give the most applicable solution towards the target condition.
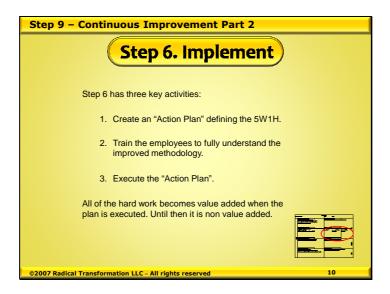
Use the appropriate tools to evaluate each idea e.g. Impact/Effort matrix, Multi voting, etc.

The goal for this step is to identify and agree on countermeasures to eliminate the root cause of the problem.

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Next, compare Step 5 with Step 1 and 3 by asking a question.

If we implement these countermeasures identified in Step 5, will it eliminate the problem and achieve the target condition?

The answer should be a clear 'Yes". If not, re-evaluate Step 1 through 5.

Step 9 – Continuous Improvement Part 2

Step 6. Implement

Step 6 has three key activities:

1. Create an "Action Plan" defining the 5W1H.

2. Train the employees to fully understand the improved methodology.

3. Execute the "Action Plan".

All of the hard work becomes value added when the plan is executed. Until then it is non value added.

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Step 6 – Implement Countermeasures

Step 1 through Step 5 have been completed.

Now the improvement team has to include the management team to get them involved in the decision making process.

Step 6 is about creating an action plan to managing the implementation of the countermeasures that were defined in Step 5.

There are three key activities included in Step 6:

1. Create an "Action Plan" defining the 5W1H:

   ‒ What actions items are required in the plan?

   ‒ When will the actions items be started and completed?

   ‒ Who will be responsible for the action items?

   ‒ What is the current status?

   ‒ How will the action items become accepted and standardized?

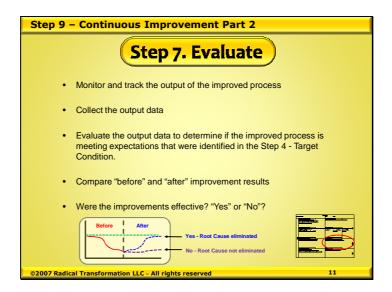**2. Train the people to fully understand the improved method:**

   ‒ Explain how much the process has changed?

   ‒ Define what is required of them?

   ‒ Explain the target output for the improved method?

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- Explain how they should monitor the improved method?
- Explain how they can measure their success?

3. Execute the Action Plan:

- Follow the action plan.

Step 7 – Evaluate Results

In Step 6, the team implemented the countermeasures.

In Step 7 the team needs to monitor and track the output of the improved process to determine if the countermeasures were effective.

They will achieve this by collecting the output data at regular intervals e.g. hourly, daily, and weekly, etc.

The output data will be analyzed to determine the specific unit of measurement for the process performance.

The team will evaluate the output data to determine if the improved process is meeting the expected target results that were identified in the Step 4 – Define Target Condition.
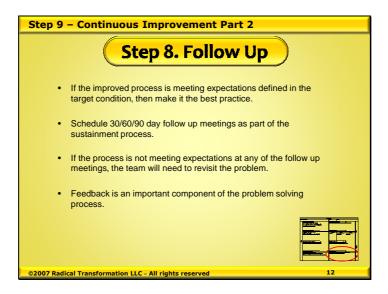
The amount of improvement can be easily calculated by comparing the "before" and "after" improvement results.

In this screen, is a diagram demonstrating the comparison of "before" and "after" results graphically.

The next important question is: Were the improvements effective in eliminating the root cause? "Yes" or "No"?

If the root cause of the problem has been eliminated the comparison will demonstrate a positive trend (shown by the dotted blue line) in the graph.

If the root cause has not been eliminated the comparison will demonstrate a stagnant or negative trend (shown by the purple dotted line) in the graph.

Step 8 – Follow Up and Standardize

The final step of the 8 step problem solving model is one of the most important.

Why is this?

All the hard work in time, effort and resources probably solved the problem and eliminated the root cause.

At this point the improvement team is going to walk away from the process and return to their everyday jobs.

The process will be handed back to the work area supervisor and employees and they will take responsibility for it.
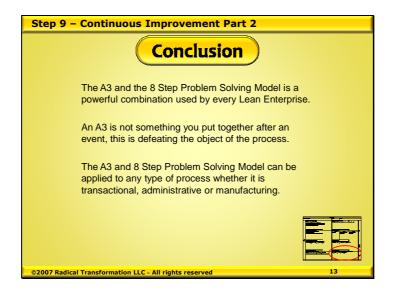
Can the management team be sure that they will sustain the improved process?

To be certain that this will happen, a follow-up plan is developed and executed.

- If the improved process is meeting expectations defined in the target condition, document and standardize it as the best practice.

- Schedule 30/60/90 day follow up meetings as part of the sustainment process.

- Ask questions about the new standardized process:
    - 30 day: Are all action items completed? Is data being collected? Yes or No?
    - 60 day: Are we trending the data? Is it a positive trend? Yes or No?
    - 90 day: Is it being sustained? Can we close out this project? Yes or No?

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- If the process is not meeting expectations at any of the follow up meetings, the team will need to revisit the problem solving steps in the A3.

Feedback is an important component at all points of the problem solving process.

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Conclusion

The A3 and the 8 Step Problem Solving Model is a powerful combination used by every Lean Enterprise.

It is systematic process that follows a structured procedure; however this procedure is not a linear process.
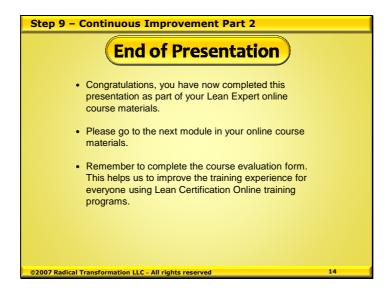
It will require the individual or team to move backwards and forwards through each of the steps to validate and align all the data and information.

An A3 is not something you put together after an event; this is defeating the object of the process.

It is a living document that is tracking the steps taken by an individual or team to identify and eliminate the root cause of a problem or waste.

The A3 and 8 Step Problem Solving Model can be applied to any type of process whether it is transactional, administrative or manufacturing.

It does not matter if an organization is assembling cars or watches, paying bills or treating a patient in a hospital bed, the A3 can be successfully implemented.

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Step 9 – Continuous Improvement Part 2

End of Presentation

- Congratulations, you have now completed this presentation as part of your Lean Expert online course materials.

- Please go to the next module in your online course materials.

- Remember to complete the course evaluation form. This helps us to improve the training experience for everyone using Lean Certification Online training programs.

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End of Presentation.

Congratulations, you have now completed this presentation.

Please go to the next training module in your Lean Expert online course materials.

Reference Materials

1. **Understanding A3 Thinking: A Critical Component of Toyota's PDCA Management System.**

   By: Durward K. Sobek II and Art Smalley. Published by Productivity Press 2008.

2. **Managing to Learn: Using the A3 Management Process.**

   By John Shook. Published by Lean Enterprise Institute 2008.

3. **Solve That Problem! Tools and Techniques for Continuous Improvement (How to Be Better).**

   By Steve Smith. Published by Kogan 1998.

4. **Quality Toolbox.**

   By Nancy R. Tague. Published by ASQ Press 2005.

5. **Out of Crisis.**

   By W. Edwards Deming. Published by MIT Press 2000.

6. **The Deming Management Method.**

   By Mary Walton. Published by Berkley Publishing Group 1986.

Lean Expert Course Workbook – Step 9 Continuous Process Improvement Part 2

Documents List

1. **A3 Template - with information for each step.**
2. **A3 Template - blank**

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A3 Template

Process Description:

Date: Name:

	PLAN	DO	CHECK	ACT

STEP 1 | PROBLEM STATEMENT
Define the problem.
Explain the impact of the problem.
Provide metrics data to validate the problem.

STEP 2 | CURRENT CONDITION:
Identify the current condition.
Define the process
Explain how the current data has highlighted the problem.

STEP 3 | TARGET CONDITION
Draw a diagram of the target process you are trying to achieve.
Define any measurable targets to support any proposed improvements.

STEP 4 | ROOT CAUSE ANALYSIS
Identify the differences between the current and target conditions.
Collect and analyse data to determine the root cause(s) of these differences.
Use the 5 Why's, Fishbone diagram, Pareto chart, etc. to achieve this.
Identify and prioritize the root causes.

STEP 5 | COUNTERMEASURES
What must you do to eliminate the root cause of the problem?
Define the actions required to eliminate the root causes.

STEP 6 | IMPLEMENTATION PLAN

When?	Who?	What?
Date/Time	Person responsible for action items?	Action Items to be completed?

STEP 7 | EVALUATE
Monitor and track the process improvements.
Compare "before" and "after" metrics.
Check the results. Are they meeting the target results?
Are the results demonstrating a positive or negative trend?
Did the improvement(s) work? Yes or No?

STEP 8 | FOLLOW UP & STANDARDIZE
What follow up activities must occur to sustain the results?
Schedule follow up meetings at 30/60/90 days after implementation
Did you complete all action items required by the 30 day milestone?
Did you complete all action items required by the 60 day milestone?
Did you complete all action items required by the 90 day milestone?
Has the problem been eliminated and the process showing measurable improvements?
Can you close this Problem Solving process and archive it as "Completed and Closed"? If A3 is closed, standardize the improved process In all areas.

PLAN

		PLAN	DO	CHECK	ACT

A3 Template

Process Description:

Date: Name:

STEP 1 PROBLEM STATEMENT

STEP 2 CURRENT CONDITION:

STEP 3 TARGET CONDITION

STEP 4 ROOT CAUSE ANALYSIS

STEP 5 COUNTERMEASURES

STEP 6 IMPLEMENTATION PLAN

When?	Who?	What?

STEP 7 EVALUATE

STEP 8 FOLLOW UP & STANDARDIZE

PLAN

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