

# Problem Solving

Creating an Enjoyable Workplace



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## Agenda

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- Problem Statements
- IS / ISNOT
- 5-Why
- Affinity Diagrams
- Fishbone
- Plan – Do – Check – Act (PDCA)



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# What is a Problem Statement?

A problem statement describes the gap between our current condition and our expected condition. Key to a problem statement is the 'absolute' or 'relative' measure of the gap.

## Absolute Measurements

- Pressure at transfer is 13000 PSI
- Part flash measures 0.014"
- Screw Speed is 1100 RPM's
- Our goal is to produce 15 boxes of assemblies every shift

## Relative Measurements

- My shoulder hurts at the end of the day
- I finding more parts on the floor
- The core breaks every time we run this mold

Shoulder hurts when I leave work

**PROBLEM GAP**

Shoulder does not hurt when I get to work



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# \*A Problem Well Stated is a Problem Half Solved!

There is a method for Problem Statement Development, it is based on the 5W's:

1. What is the problem that needs to be solved?
2. Why is it a problem?
3. Where and How often is the problem observed?
4. Who is impacted by the problem?
5. When was the problem first observed?

\*Charles Kettering, Head of Research at General Motors from 1920 - 1947



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## Problem Statement

## Problem Statement Example

1. What is the problem that needs to be solved?
  - We incorrectly insert light pipes in the mold.
2. Why is it a problem?
  - The part cannot be used in our customers final assembly.
3. Where and How often is the problem observed?
  - At our customers facility while assembling the parts; it occurs every time we run this process.
4. Who is impacted?
  - Our company because this failure results in returns and rework to correct and our customer who loses faith in our ability to produce their parts – this ruins future opportunities.
5. When was the problem first observed?
  - Our first defect was identified in 2014



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## Problem Statement

## Our Statement

*For many years we have been inserting light pipes (over-molding) into mold 01-0832 and by doing so our customers receive product that cannot be assembled causing us RMA's, customer ill will and operator frustration as a result of how difficult this product is to produce.*



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# IS and IS NOT

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## IS/ISNOT

# IS and IS NOT?

The **IS** / **ISNOT** tool is used to apply boundaries around our problem.

Placing Light Pipes Incorrectly in the Mold	
IS	IS NOT
Is dependent on the operator	Is not a machine problem
Is dependent on the part design	Is not a mold problem
Is dependent on the process	Is not dependent on a specific person
	Is not dependent of a specific shift



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## 5-Why

- Problem Statements
- IS / ISNOT
- 5-Why
- Affinity Diagrams
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## Kids Are Annoying!

You all have probably lived through that annoying event with a child, the insistent “why?” And if you have participated in an ‘event’, there is a good chance that you ended the ‘event’ frustrated and under great distress you stated

**“BECAUSE I SAY SO!!!!!!”**

Our 5-Why is not as annoying but is probably as frustrating, but only if you let it run out of control.



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5-Why

## The Root of the Problem

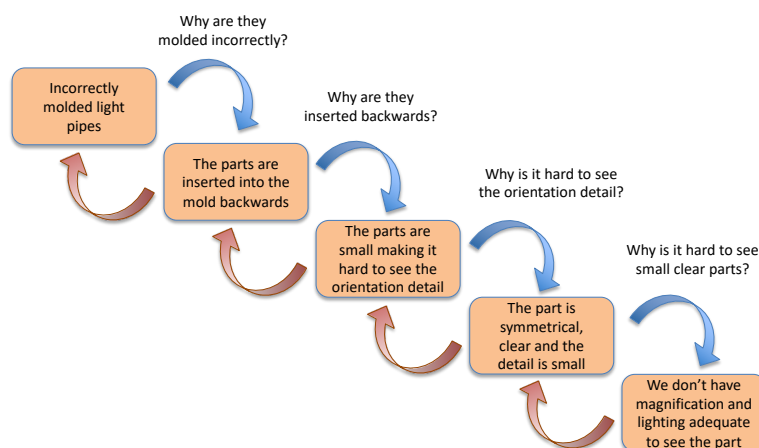
- The 5-Why process gives direction for action
- When we get 'stuck' on our Why, use Affinity diagrams and Ishikawa diagrams (fishbone) to 'un-stick' us
- 5-Why's are not required, it may take 2-Why's or 8-Why's
- The "Why" process works like a funnel, if the funnel begins to inversely expand – stop – you have ventured into another potential cause



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5-Why

## The Root of the Problem



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## Affinity Diagrams

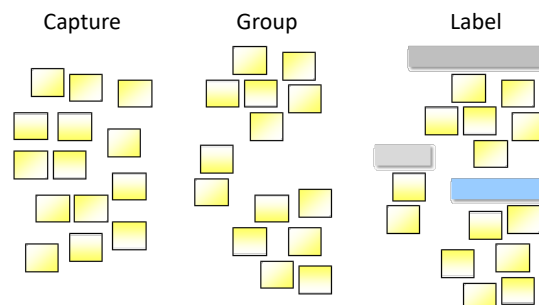
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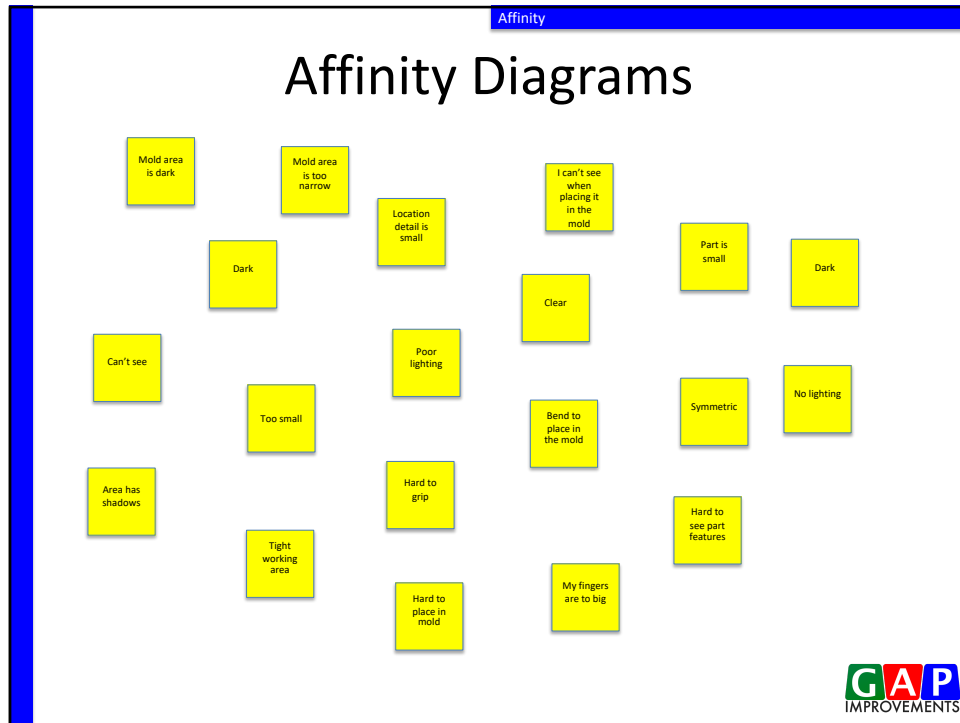
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## Affinity Diagrams

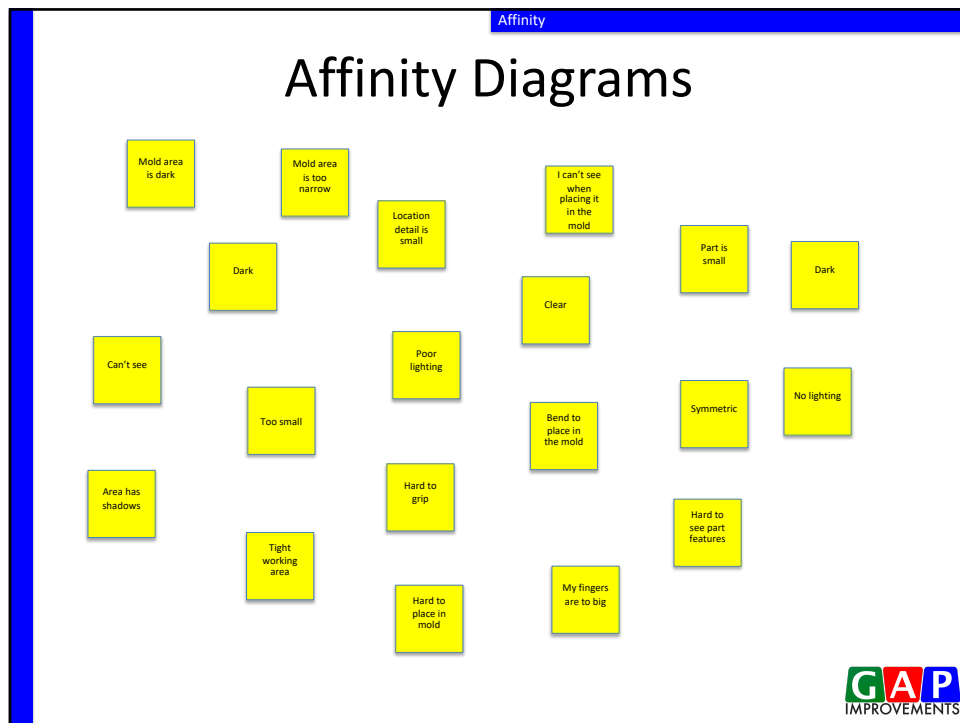
Affinity Diagrams are idea generators used to help team's group and define their ideas associated with a problem they are trying to resolve.



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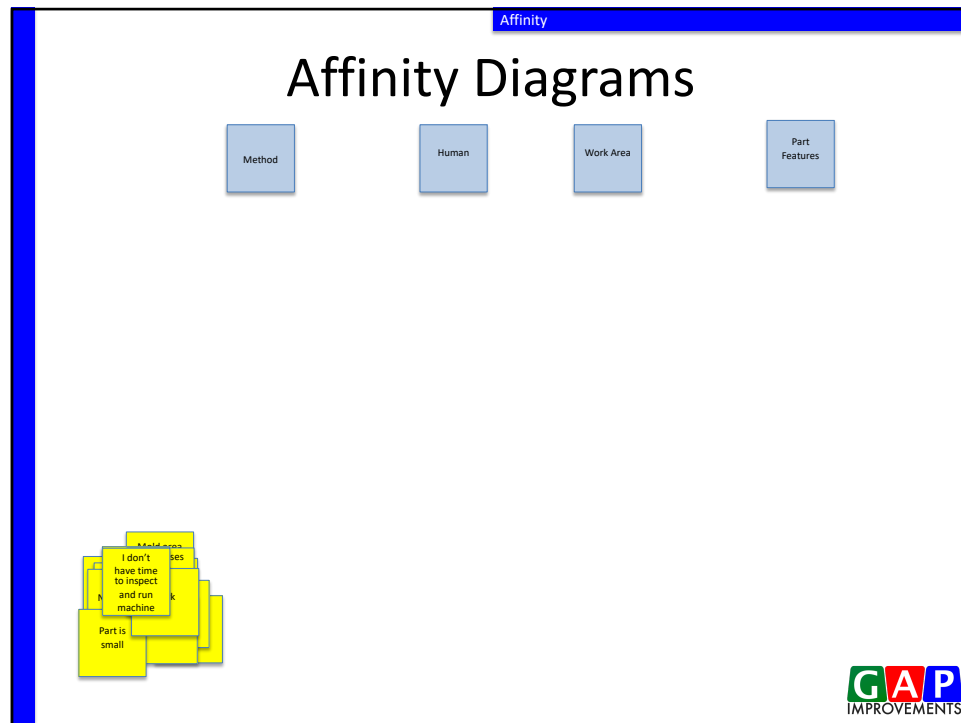


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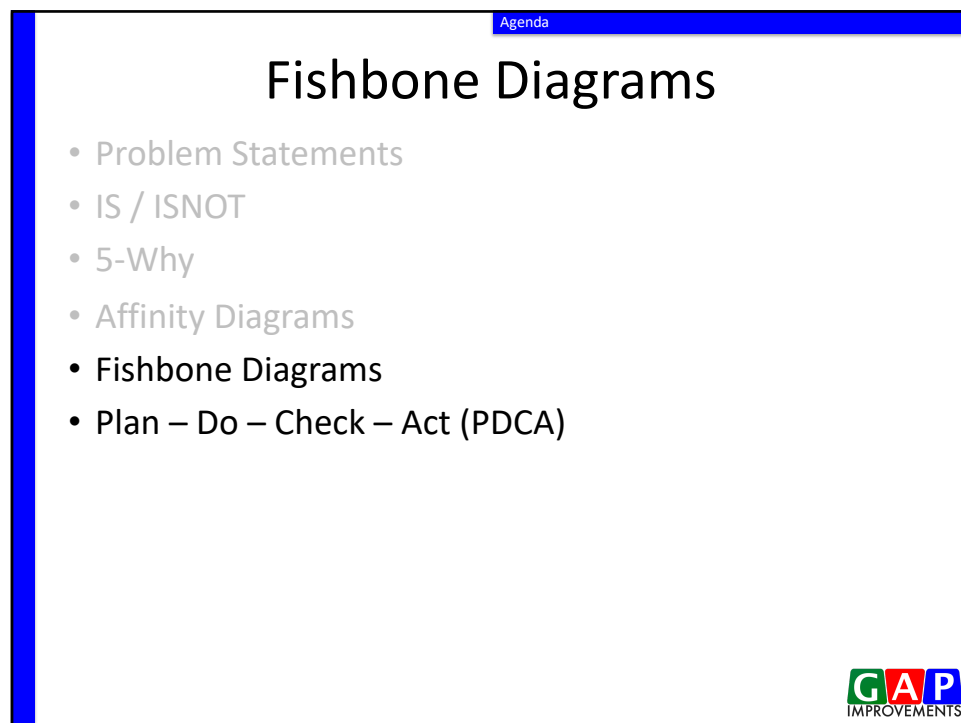


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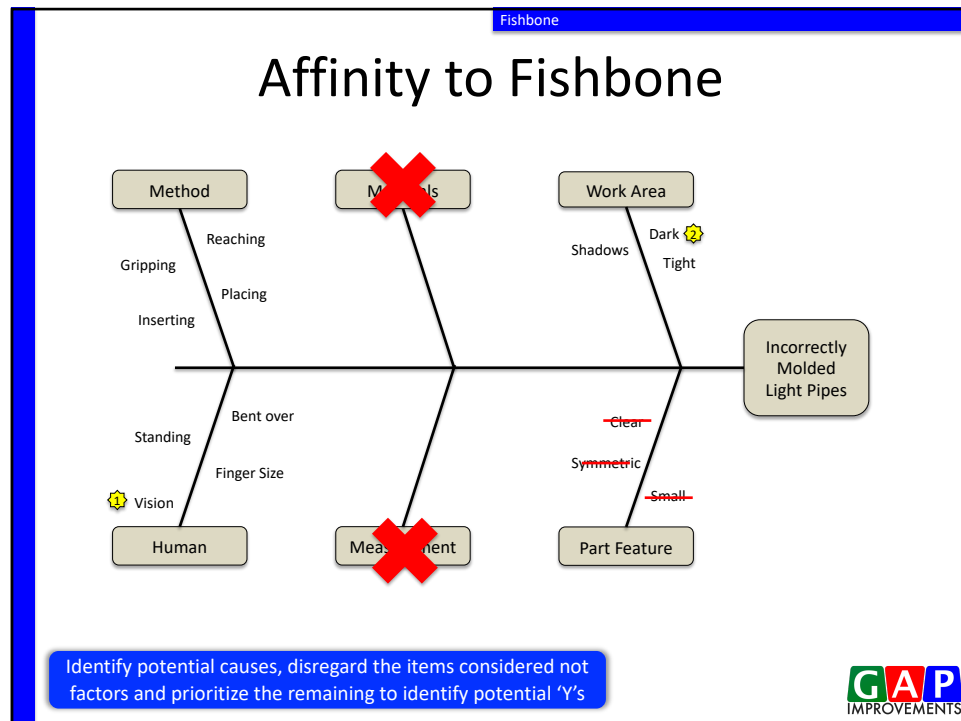




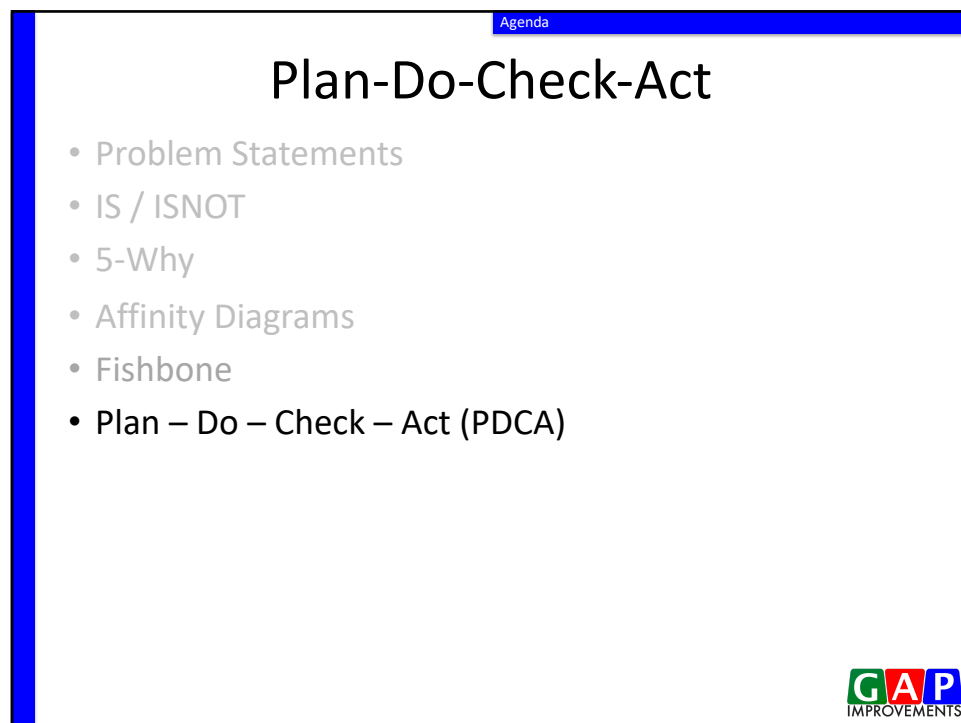
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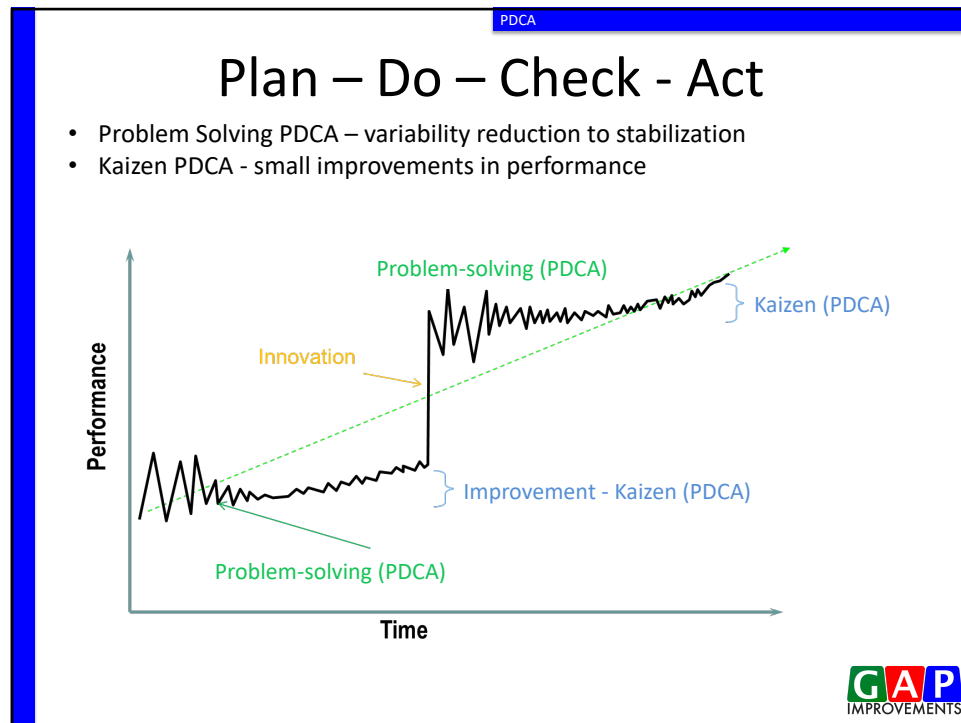
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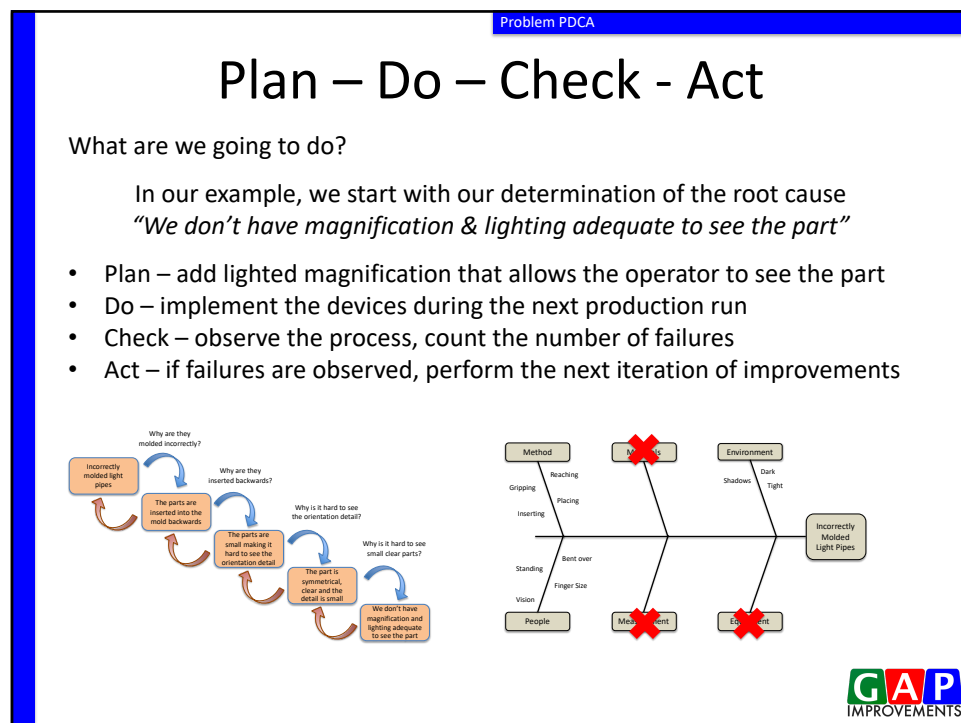
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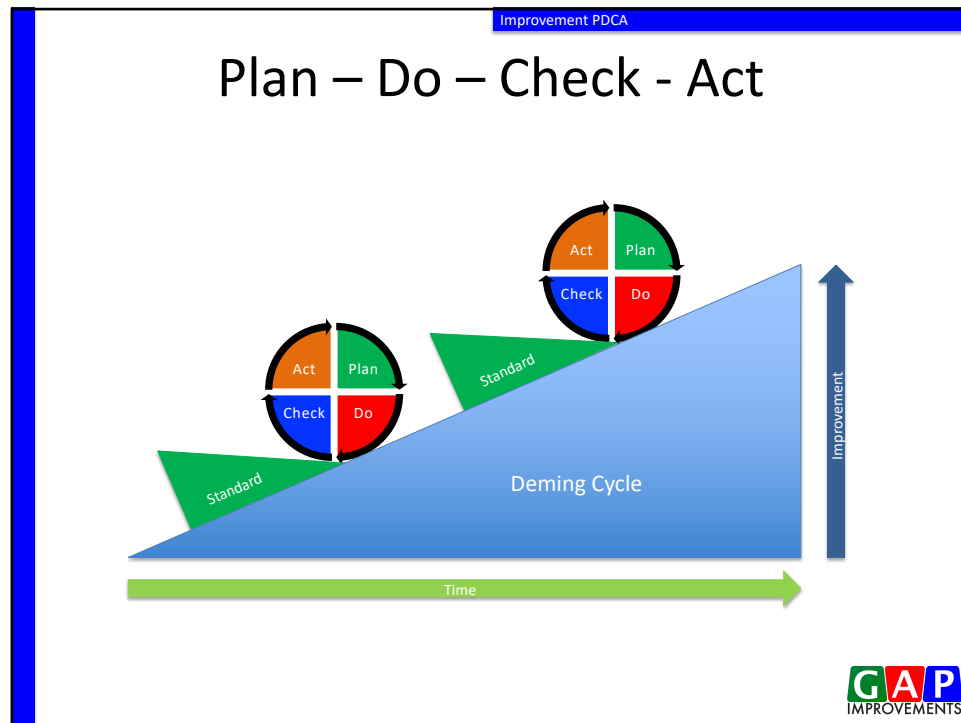
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Kettering - Ishikawa - Deming

"AN INVENTOR IS SIMPLY A FELLOW WHO DOESN'T TAKE HIS EDUCATION TOO SERIOUSLY."

Charles F. Kettering  
1876 - 1958






"AS WITH MANY OTHER THINGS, THERE IS A SURPRISING AMOUNT OF PREJUDICE AGAINST QUALITY CONTROL, BUT THE PROOF OF THE PUDDING IS STILL IN THE EATING."

Kaoru Ishikawa  
1915 - 1989

"IF YOU CAN'T DESCRIBE WHAT YOU ARE DOING AS A PROCESS, YOU DON'T KNOW WHAT YOU ARE DOING."

W. Edwards Deming  
1900 - 1993



**GAP**  
IMPROVEMENTS

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