University of Kentucky

Lean Systems Program

8 Step Problem Solving Method

Lean Systems Program
Institute of Research for Technology Development
College of Engineering
University of Kentucky

Learning Goals

- Deepen your awareness of the importance of the 8 step process to effective problem solving
- Apply the process to your own work situation during class discussion
- Experience how the A-3 tool communicates the process thinking
- Apply in the work environment

8 Step Problem Solving Process

8 Step Process for Problem Solving

Steps / Depth	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Zero level ↓ Go deeply on each step ↓ Complete	↓	↓	↓	↓ Root Cause	↓	↓	↓	↓ Toyota strength-standardize

Guiding Principles

Company Culture issue—follow each step completely

Use steps as a “check-sheet”

Guiding Principles

1) Customer viewpoint

Think and act for the customers

****Following process is the customer**

Guiding Principles

2) Confirm the Purpose of Your Work

Constantly question the purpose

Seek your own answers

Keep the overall goal and purpose in focus

Guiding Principles

3) Ownership and Responsibility

You are responsible for your work success

Take pride in your work

<u>Ask:</u>

"What can we do something about - how can we improve our work?"

Guiding Principles

3) Ownership and Responsibility

When people detect problems,

- × **Do not blame people**
- ○ **Appreciate people**

Guiding Principles

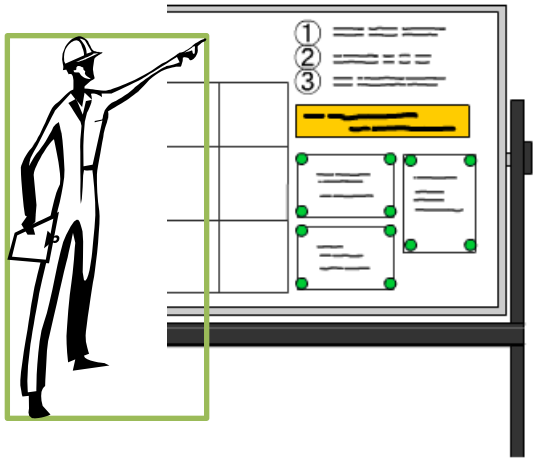
4) Visualization

Make results and data visible

Clarify problems for everyone to see

Information is timely

Data is understandable to the work group



Guiding Principles

4) Visualization

Any variation hints there is a problem:

- **Variation in the workload**
- **Team member has trouble**
- **Equipment or parts vary**

Key Point: look for early indicators "near miss" thinking

Guiding Principles

5) Judgment Based on Facts

Without guessing or assuming

Go and See

at the work place,

get out of the

meeting room

(*Genchi Genbutsu*)

"Get Your Boots on!"

Investigate

Guiding Principles

6) Think and Act Persistently

Think deeply

Complete each step of problem solving process

Don’t give up until results meet goal

<u>Good Process=Good Results</u>!

Guiding Principles

7) Speedy Action in a Timely Manner

Be adaptable to the work process needs - take action quickly

Keep at it until <u>TRUE countermeasures</u>

are in place

-that which if implemented prevents problem from returning

If necessary, use <u>TEMPORARY measures</u>

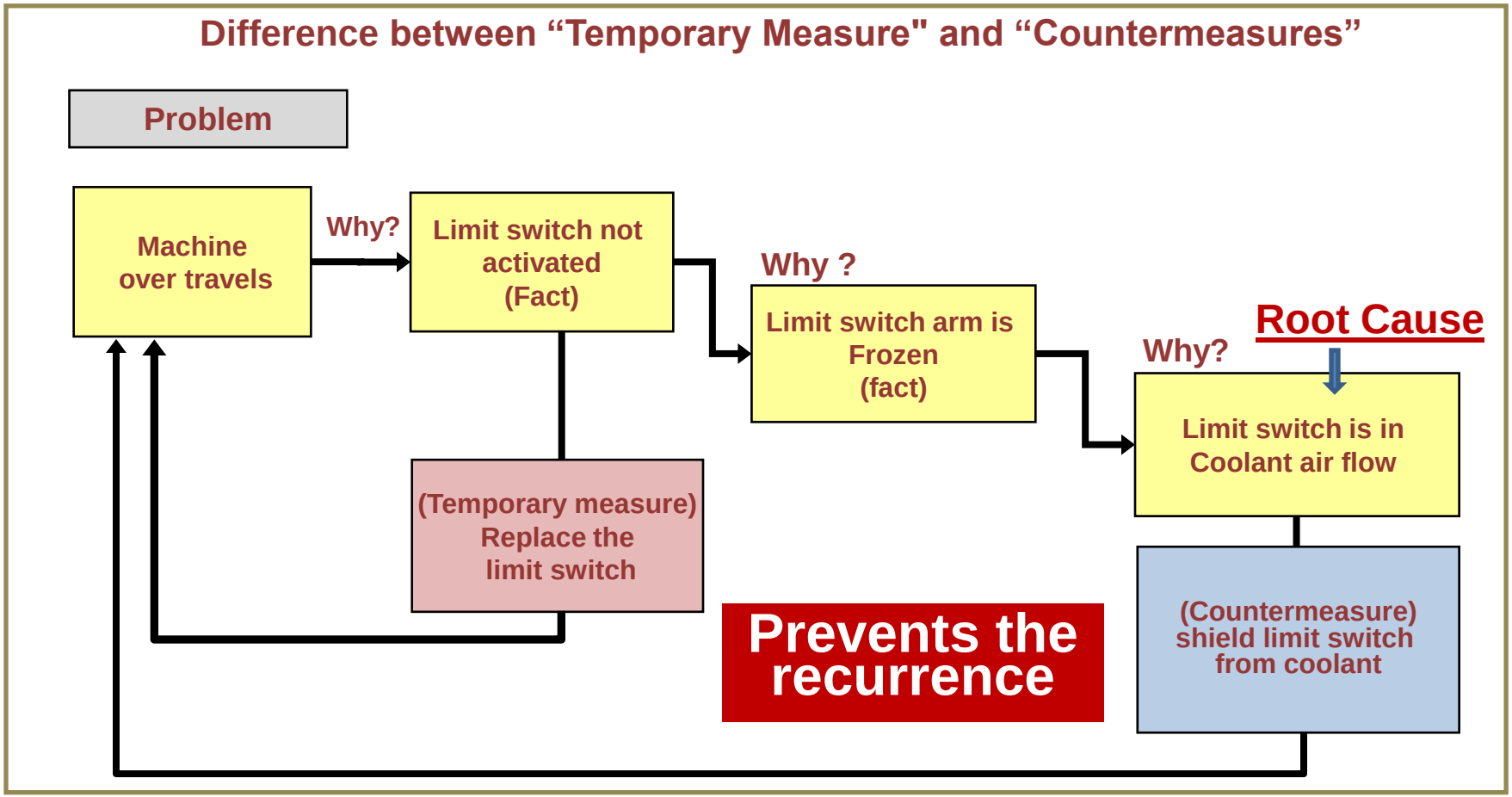
-when a problem occurs, take action quickly

Temporary Measure

Action to stop or contain the problem--can add necessary extra work to the process (+ $ / + 🧍 / + ☹)

- When a problem occurs, take action quickly
- Purpose is to contain the problem, not solve it

Temporary Measure Example



Temporary Measure Matrix

Select the optimal containment action on the following criteria:

- Simplicity
- Minimal modification to current process
- Time to implement

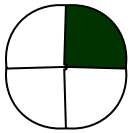
	Option 1	Option 2	Option 3
Simplicity	10	8	7
Modification	9	10	5
Time	10	9	7
	29	27	17

Rate each option relative to each other for each criteria

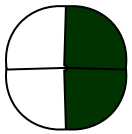
Sum the score and select the option with the highest score

Temporary Measure Implementation Plan

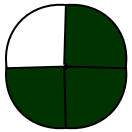
Containment / Temporary Measure		Owner	Date	Status
Quality Check at the last operation by Team Member		Team Leader	7/18/2006	
Team Leader Checking two bundles each shift as part of Standardized Work		Team Leader	7/18/2006	



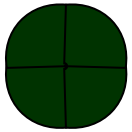
Problem Identified



Temporary Identified



Temporary Implemented



Follow up Complete

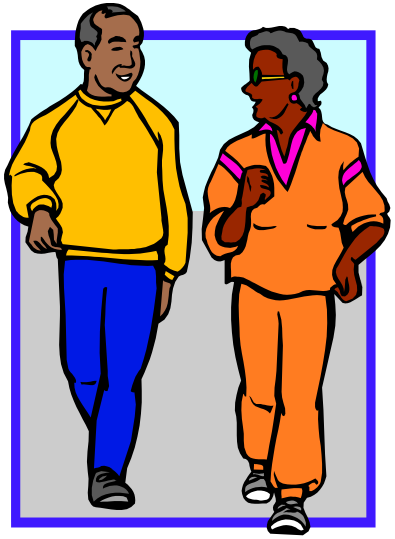
Guiding Principles

8) Thorough Communication

Thoroughly and sincerely communicate

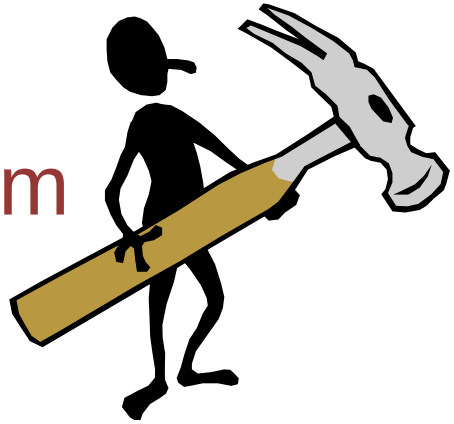
Involve all stakeholders

Japanese concept of "*Nemawashi*"



Guiding Principles

- Find the problem



- Fix the problem

- Keep the problem from coming back

What Defines a problem in the 8 Step method?

Problems are the path toward improvement

“No one has more trouble than the person who claims to have no trouble.”

(Having no problems is the biggest problem of all.)

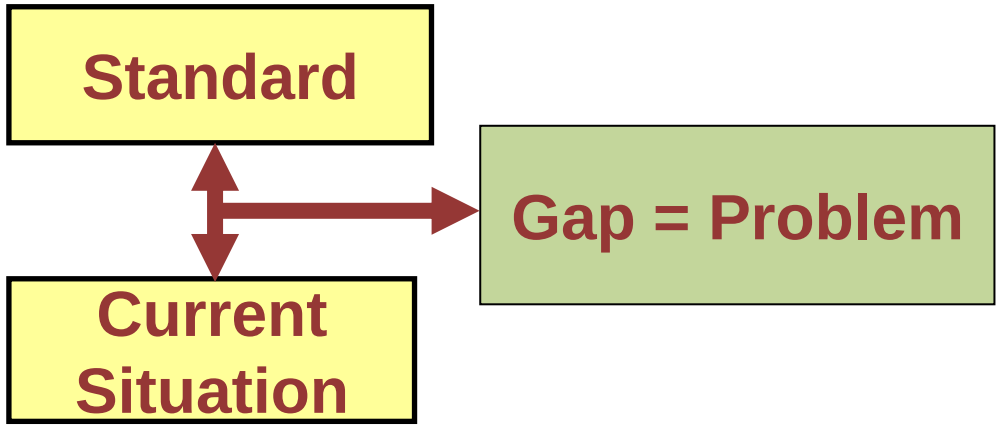
by Taiichi Ohno

What Defines a problem in the 8 Step method?

A problem is …

The current situation gap to the standard = PROBLEM

- Fact based
- Discovery driven



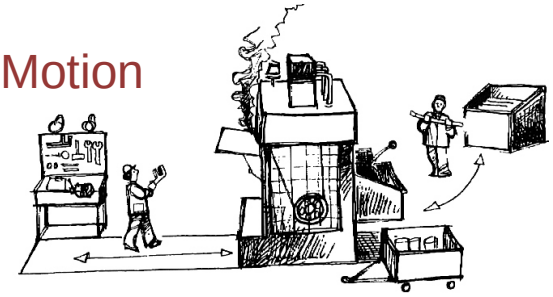
What Defines a problem in the 8 Step Method?

Non Value Added Work = Waste

Waste is any factor which does not contribute to the process by adding value. The goal of Lean is to eliminate any factors which raise cost without adding value to the product.

What Defines a problem in the 8 Step Method?

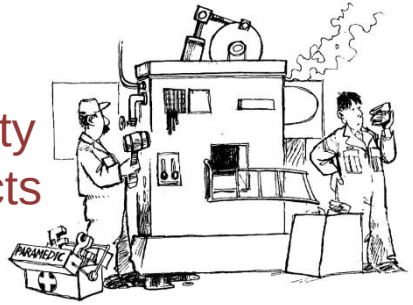
Motion



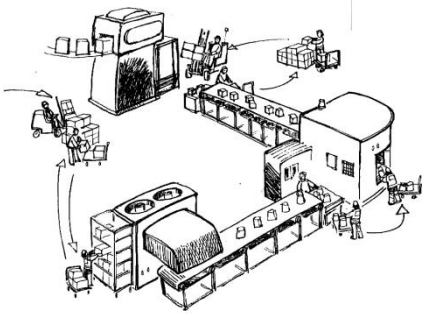
Overproduction

Inventory

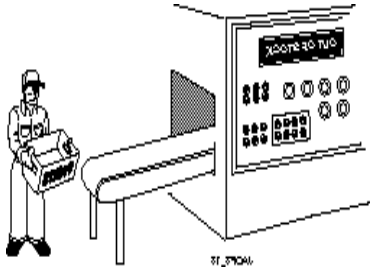
Quality Defects



The 7 Wastes!



Transportation

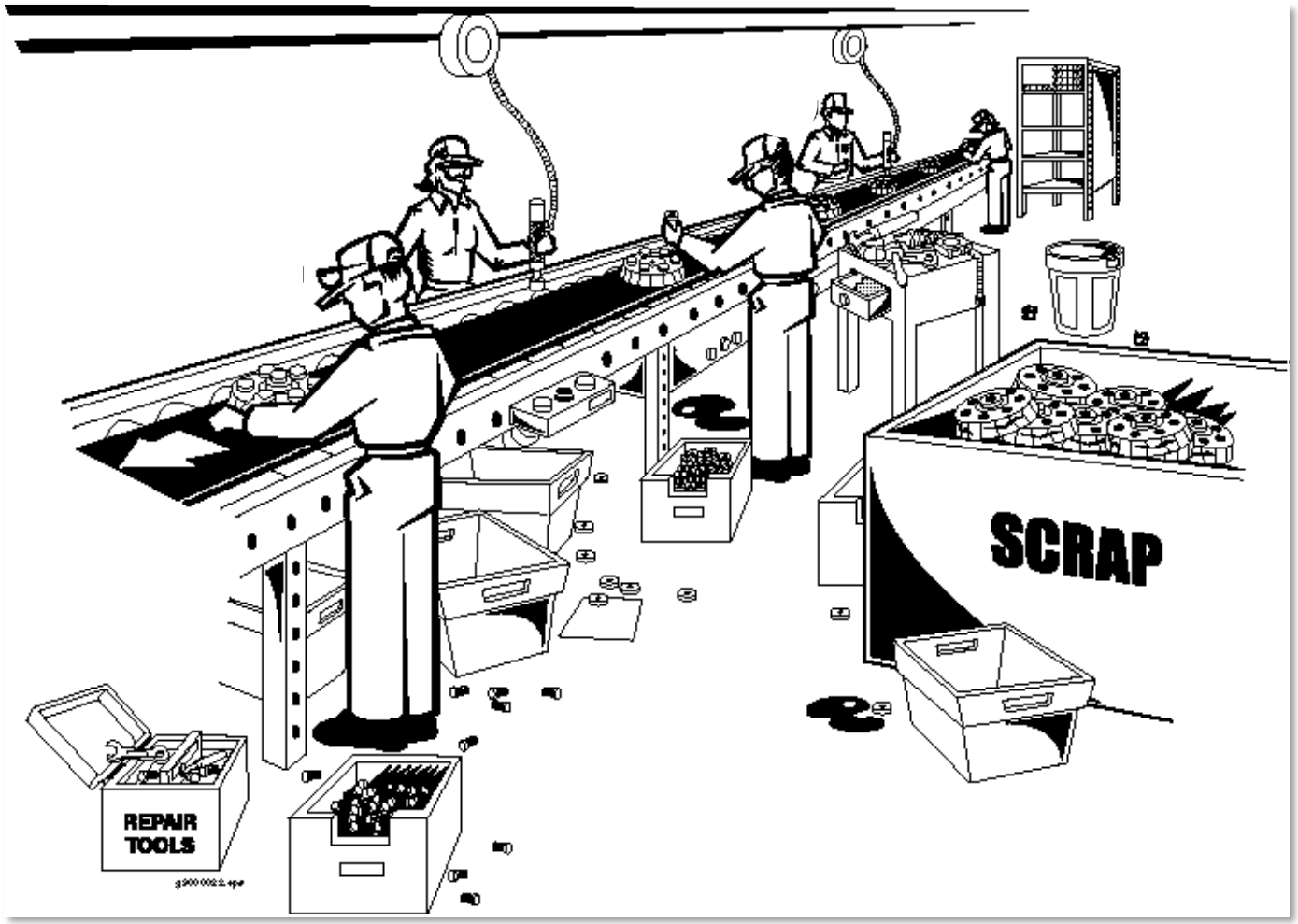


Waiting

Over Processing

What Defines a problem in the 8 Step Method?

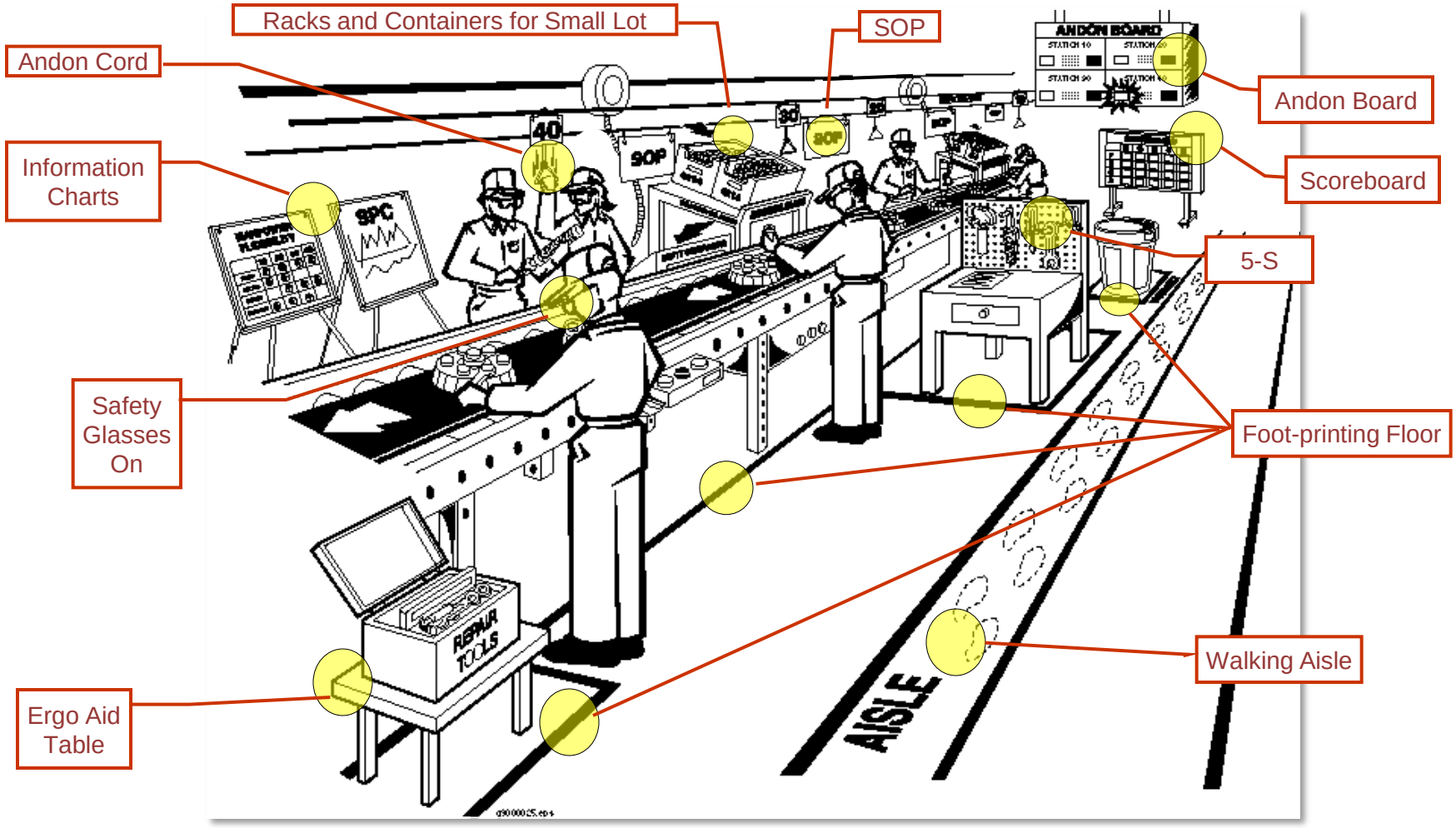
Would you like to work in this place?



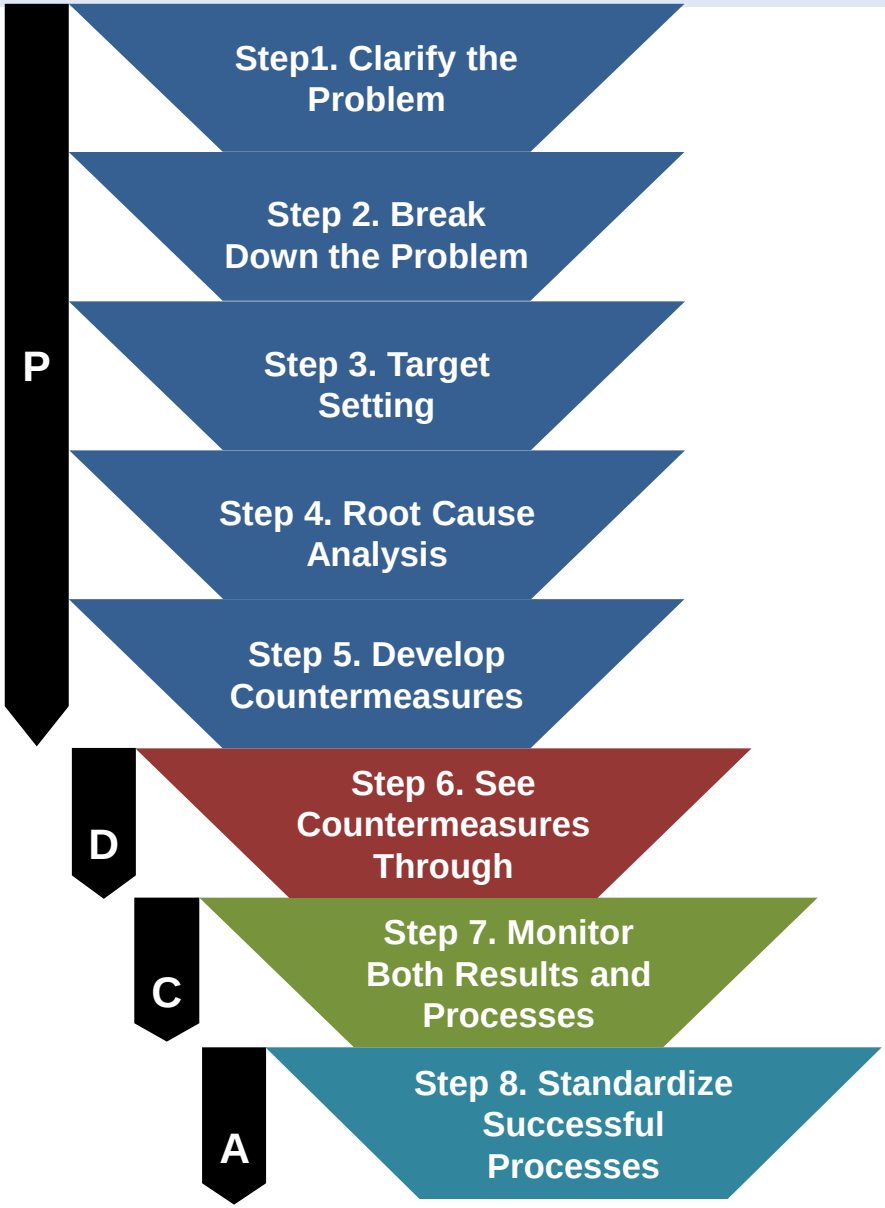
What Defines a problem in the 8 Step Method?

After

See normal vs abnormal



8 Step Process for Problem Solving



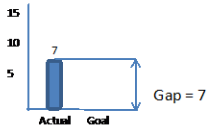
Example of Problem A-3 Report

1. Clarify the Problem

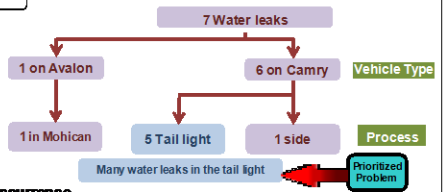
Ultimate Goal: No waterleaks in TMMK produced cars

Ideal Situation (Standard): Zero audit defects from Sealer area

Current Situation: 7 waterleaks on 7/28



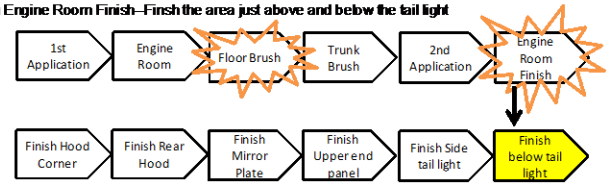
2. Break Down the Problem



Go and See Investigation for Point of Occurrence

1) Floor Brush–Finish lower seam on end panel

2) Engine Room Finish–Finsh the area just above and below the tail light



3. Target Setting

Target: Eliminate 5 tail light area water leaks on Camry by 7/29

4. Root Cause Analysis

5 water leaks in the tail light area

- T/M leaving gaps in finish
  - T/M not turning spatula into the seam
    - T/M not instructed in proper angle of finish when trained
      - No specification in STW for proper spatula angle when finishing — **ROOT CAUSE**

5. Develop Countermeasure

R.C. No spec in standard work for spatula angle

	Effort	Cost	Safety	Effectiveness	Overall
Add inspection process	Δ	Δ	O	Δ	Δ
Train T/M's in correct angle to hold spatula	Δ	O	O	O	O
Repair in CART	X	X	O	X	X

Temp Action

Add inspection key points at quality gate and feedback to T/M's - 7/28

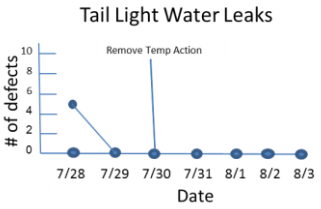
6. See Countermeasure Through

Countermeasure Plan - Train T/M's in correct spatula angle

What	Who	When	Status
Rewrite Standard Work	T/L	7/28	100%
Develop SWES with Key Points	T/L	7/29	100%
Train T/M's	T/L	7/30&31	100%
Check for 3 Shifts	T/L	8/3	100%
Remove Temp Action	T/L	7/30	100%

7. Monitor Both Results and Processes

Tail Light Water Leak Tracking	
7/28	5 defects
7/29	0 defects
7/30	0 defects
7/31	0 defects
8/1	0 defects
8/2	0 defects
8/3	0 defects



8. Standardize Successful Processes

Yokoten: Contact other NAMC's to confirm no problem

Follow-up: Have Pilot add special check for finish angle in Standardized work development

Example of Problem A-3 Report

Name:
Dept. & Resp.:
Date:

Title: Reducing Manual Check Printing

MGR: TL:
Asst. MGR: TM:
GL: TM:

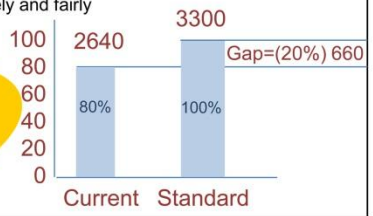
1. Clarify the Problem

Ultimate Goal: TMs are compensated for work completed and paid timely and fairly

Standard: 100% (3300) of TM's paychecks are deposited error free

Current Situation: 80% (2640) of TM's paychecks are deposited error free

GAP
20% (660) paychecks need a manual check to correct errors



2. Break Down the Problem

20% (660/3300) manual checks being issued

- Group Leader Error 35% (231/660)
  - Time Execution 61% (142/231)
  - Other 39% (90/231)
- Other 23% (151/660)
- Salary Continuation 42% (277/660)
  - STD Not Paid 30% (83/277)
  - FMLA PTO Not Paid 70% (193/277) — Prioritized Problem

FMLA Process Flow

Point of Occurrence (POO)

T/M obtains FMLA form → T/M submits form to TMR by deadline → TMR reviews form - submits by deadline → Payroll system updated by deadline → T/M received paycheck with correct amount

Problem: FMLA paperwork is not received from TMR by the payroll deadline.

3. Target Setting

Target: Eliminate 100% late submissions of FMLA forms to meet payroll deadline by March 2009. (193 of 660 total gap)

4. Root Cause Analysis

FMLA paperwork is not received from TMR by the payroll deadline
- Form doesn't pass review
  - Form was submitted incorrectly
    - Part "D" not complete
      - T/M thought HR was to complete
        - Instructions not clear in Part "D"

5. Countermeasure Options & Evaluation

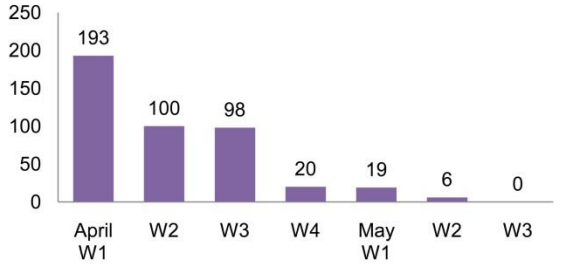
Options	Effectiveness	Budget	Speed	Quality	Overall Assessment	Comments
Post clearer instructions on T/M board	X	O	O	X	X	-Create awareness of enhancement -Help T/Ms who review board -Not helpful at home
Update instructions on form	Δ	O	O	Δ	Δ	-Would document enhancement as new standard -Dependent on T/M reading it
Have TMR instruct T/M	Δ	O	O	Δ	Δ	-Verbally communicate the enhancement -Cannot ensure that T/M will remember the instructions if not written down
Update instructions on form along with TMR communications	O	O	Δ	O	O	-Would document enhancement as new Standard while confirming the instructions

6. Action Plan

Item (What) (When)	Resp (Who)	Timing: Feb W1	W2	W3	W4	March W1	W2	W3	W4
Draft form with clearer instructions	TH	→ ▼							
Sample T/M response; revise as needed	TH		→ ▼						
Consensus/Approval throughout HR	RK			→ ▼					
Coordinate communication method with TMR and roll out	SE							→	▼

7. Monitor Both Results and Processes

Number of FMLA forms from TMR not meeting payroll deadline



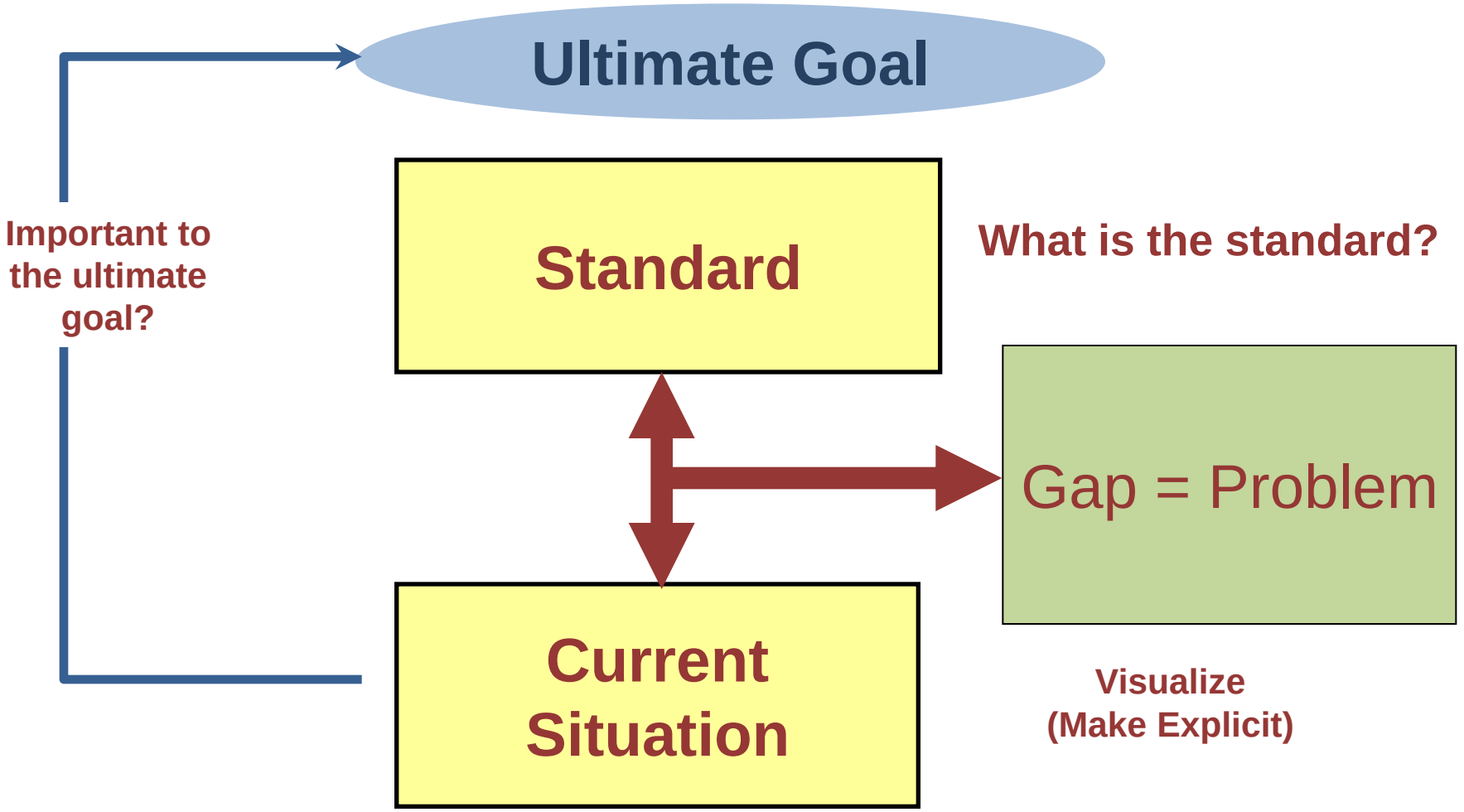
8. Standardize Successful Processes

Document reason for adding additional instructions to form
Standardize electronic form in database with revision date
Yokoten: Share the new form with other NAMC's by June 30

Step 1) Clarify the Problem

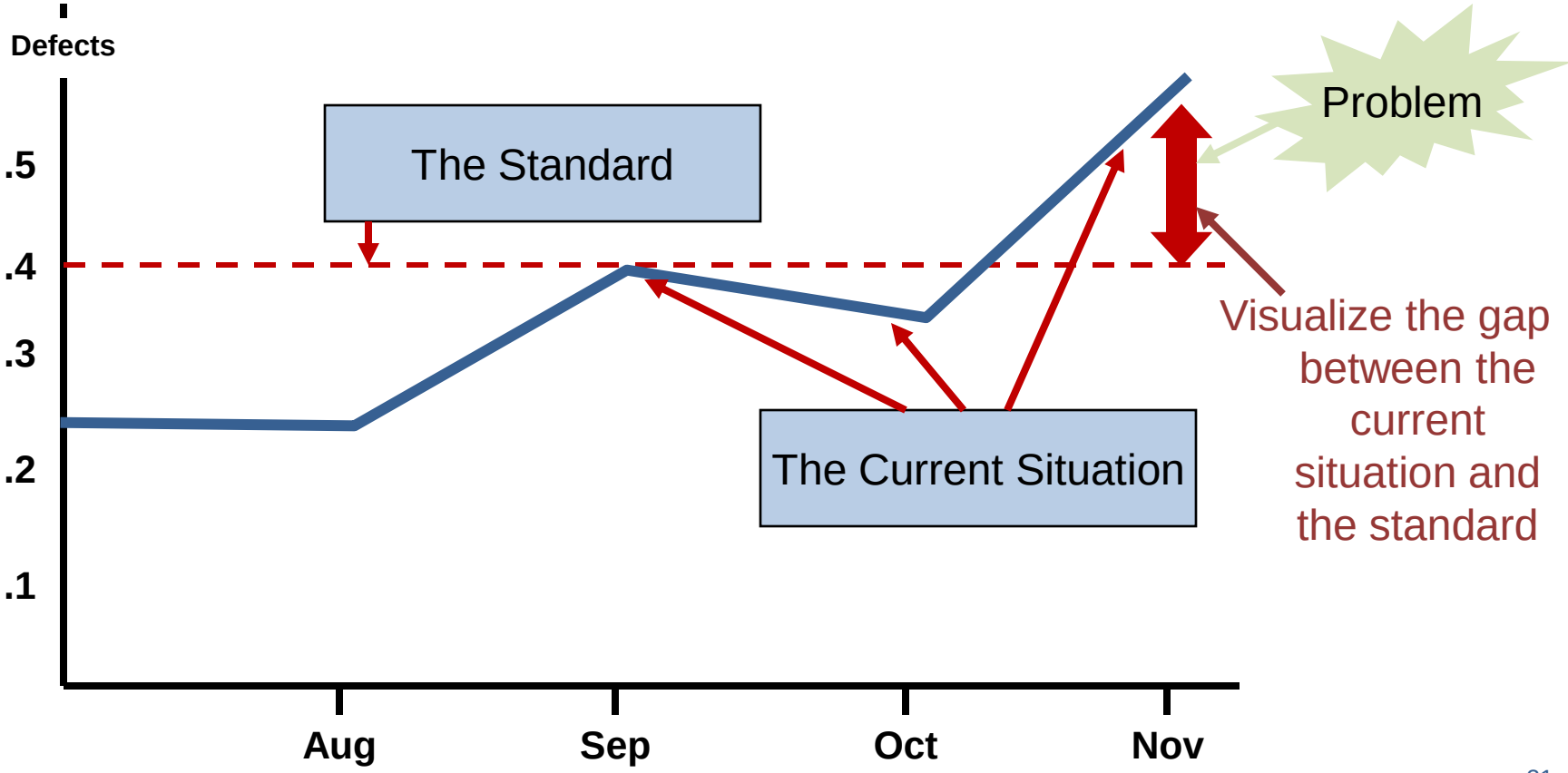
8 Steps	Proceedings
Step 1. Clarify the Problem	(1) Clarify the "Ultimate Goal" of your responsibilities & work (2) Clarify the "Standard" of your work (3) Clarify the "Current Situation" of your work (4) Visualize the gap between the "Current Situation" and the "Standard"

What Defines a problem in the 8 Step method?



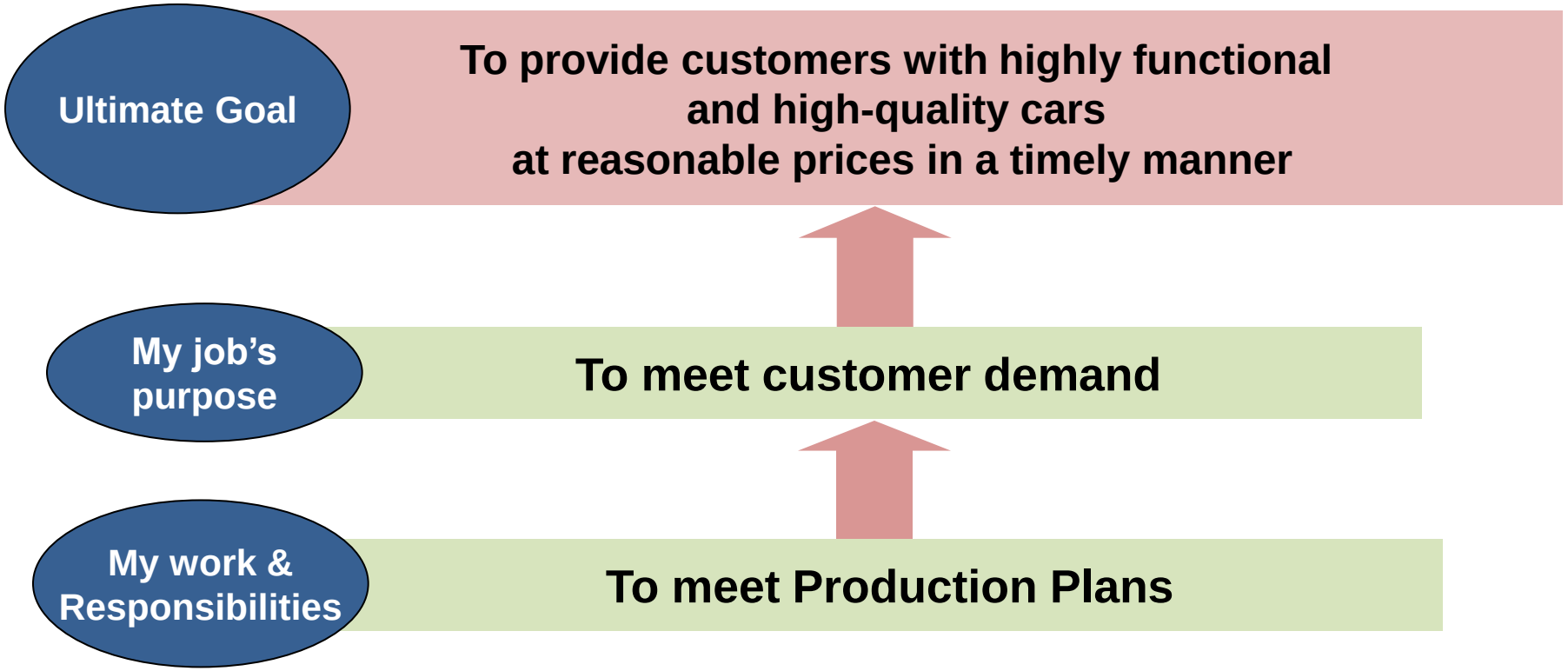
Step 1) Clarify the Problem

Visualize the gap between the "Current Situation" and the "Standard"



Step 1) Clarify the Problem

Process1. Clarify the "Ultimate Goal" of your responsibilities & work



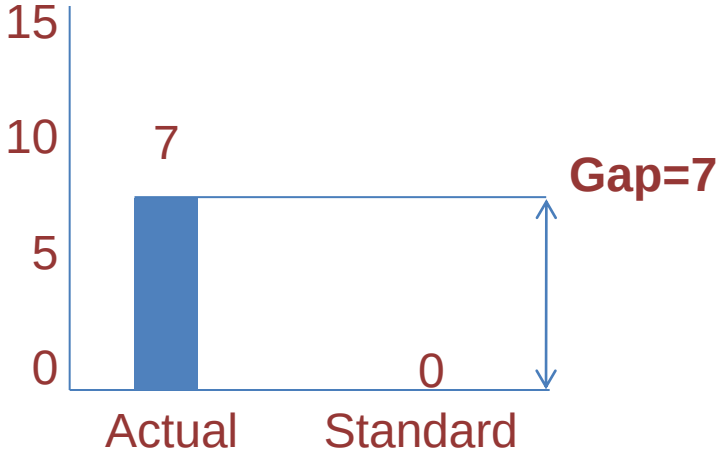
Example: Step 1

1. Clarify the Problem

Ultimate Goal: Assure TMMK cars meet customer requirement for quality

Standard: Zero audit defects from sealer area

Current Situation: 7 water leaks on 7/28



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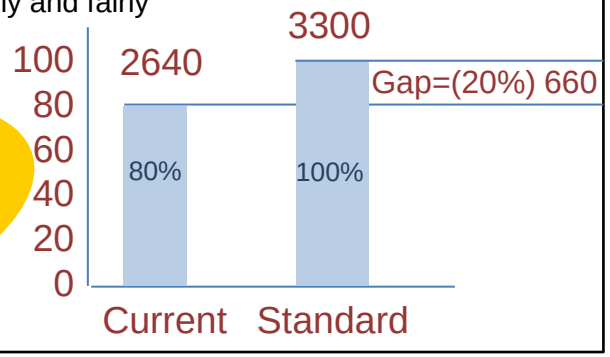


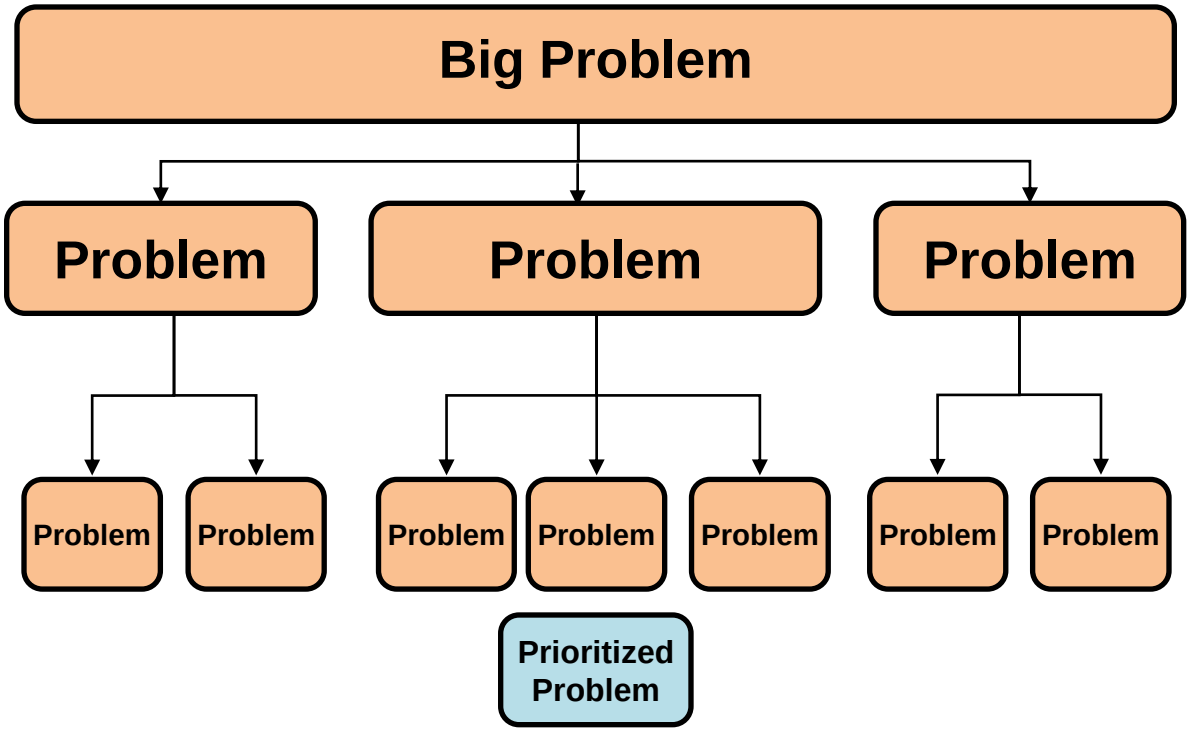
Step 2) Break Down the Problem

8 Steps	Proceedings
Step 1. Clarify the problem	(1) Clarify the "Ultimate Goal" of your responsibilities & work (2) Clarify the "Standard" of your work (3) Clarify the "Current Situation" of your work (4) Visualize the gap between the "Current Situation" and the "Standard"
Step 2. Break down the problem	(1) Break down the problem (2) Identify the prioritized problem (3) Specify the point of occurrence by checking the process through GENCHI GENBUTSU

Step 2: Break Down the Problem

- Formulating a clear, concise statement from your Gap
- The statement describes the difference between the standard and current situation
- During this step, break the large problem into smaller, more specific problems
- If you can't describe it, you can't solve it!

Step 2) Break Down the Problem



What
Where
When
Who

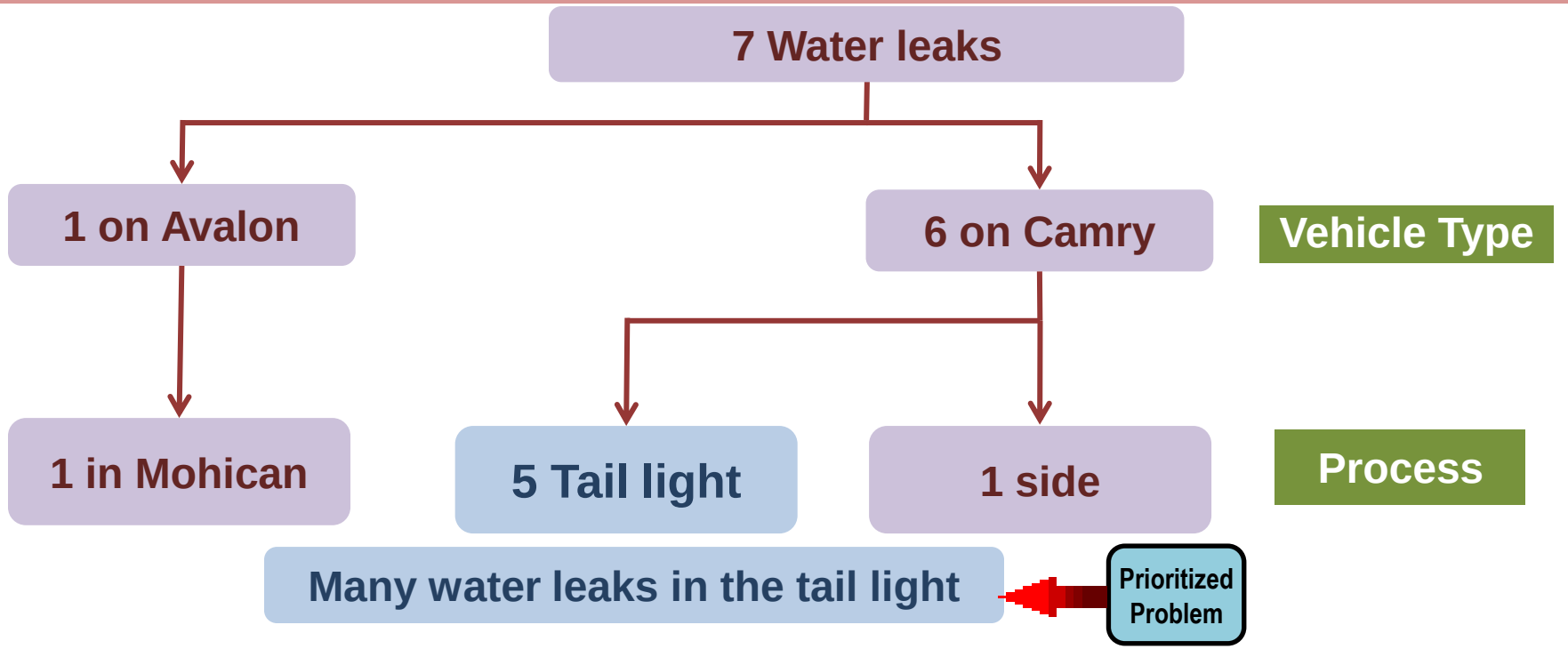
NOT Why!

Prioritized Problem at the Point of Occurrence (PoO)

Step 2) Break Down the Problem

Narrow the problem sufficiently

Classify and quantify



Priority decision: tackle the biggest impact problem FIRST

Step 2) Break Down the Problem

Division points to break down the problem (classify)

Car sales not meeting the target

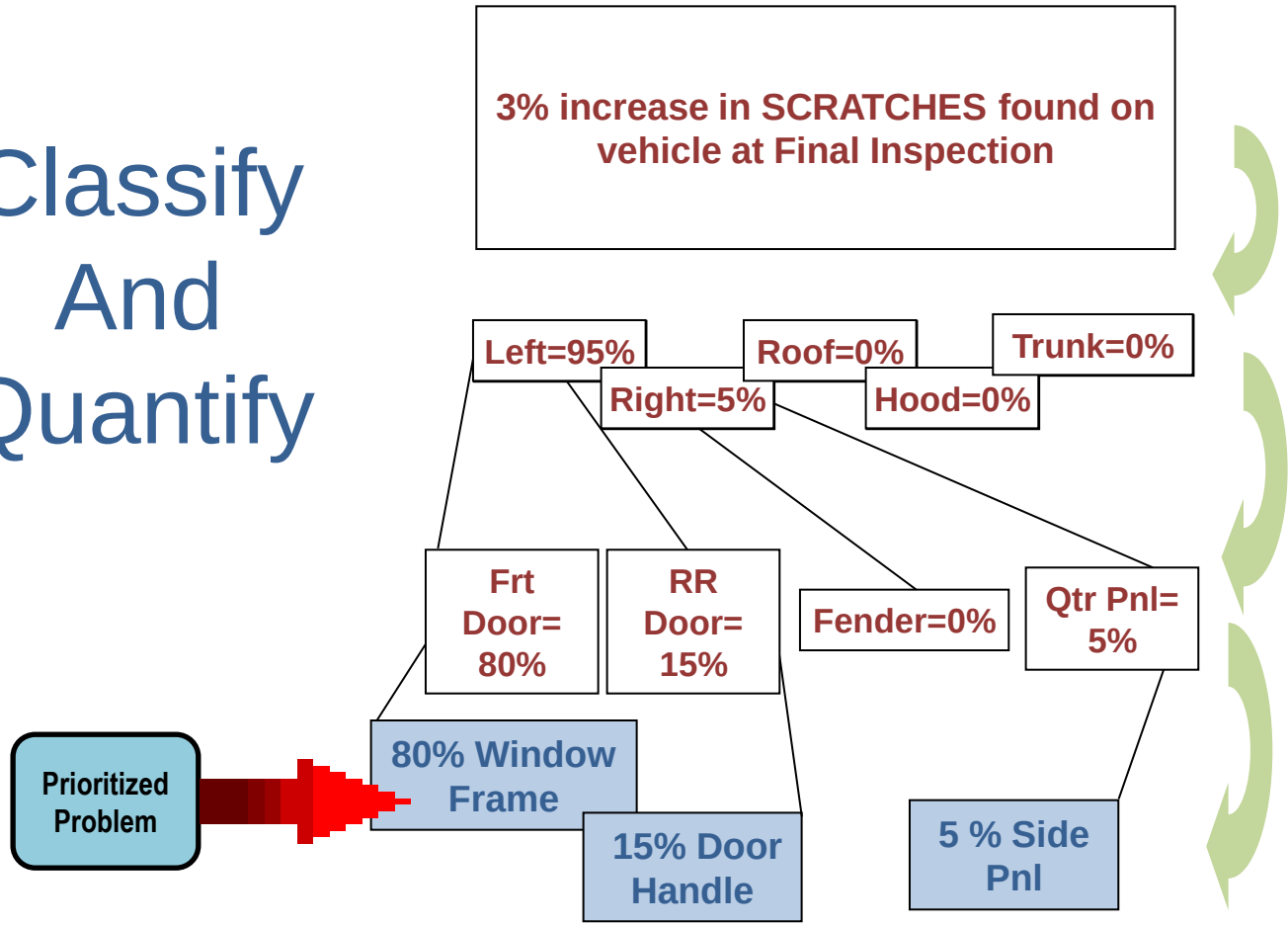
- ·By region
- ·By age
- ·By vehicle model
- ·By gender
- ·By month
- ·By vehicle type etc.

Not achieving cost targets

- By department (group)
- By process
- By equipment
- By expenditure type
- By month
- By types of cutting tools, etc.

Step 2: Break Down the Problem

Classify And Quantify

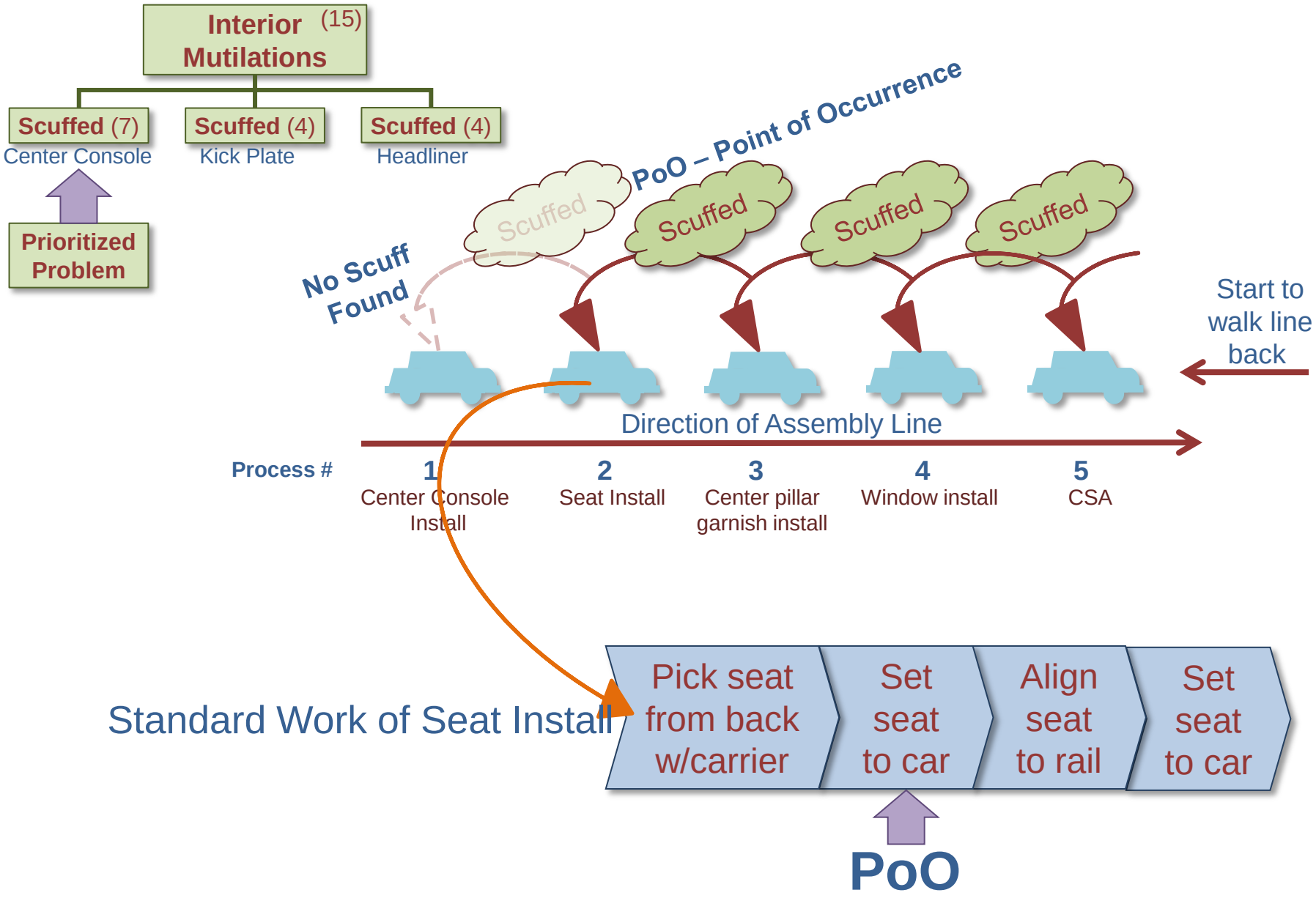


8 Step Problem Solving

(Locate Point of Occurrence)

- The point of occurrence (PoO) is the actual work element at the physical location where the problem is first seen
- For example, walk the line back. Check each work station, until you arrive at the station where the problem is no longer seen

Locate Point of Occurrence (PoO)



Step 2) Break Down the Problem

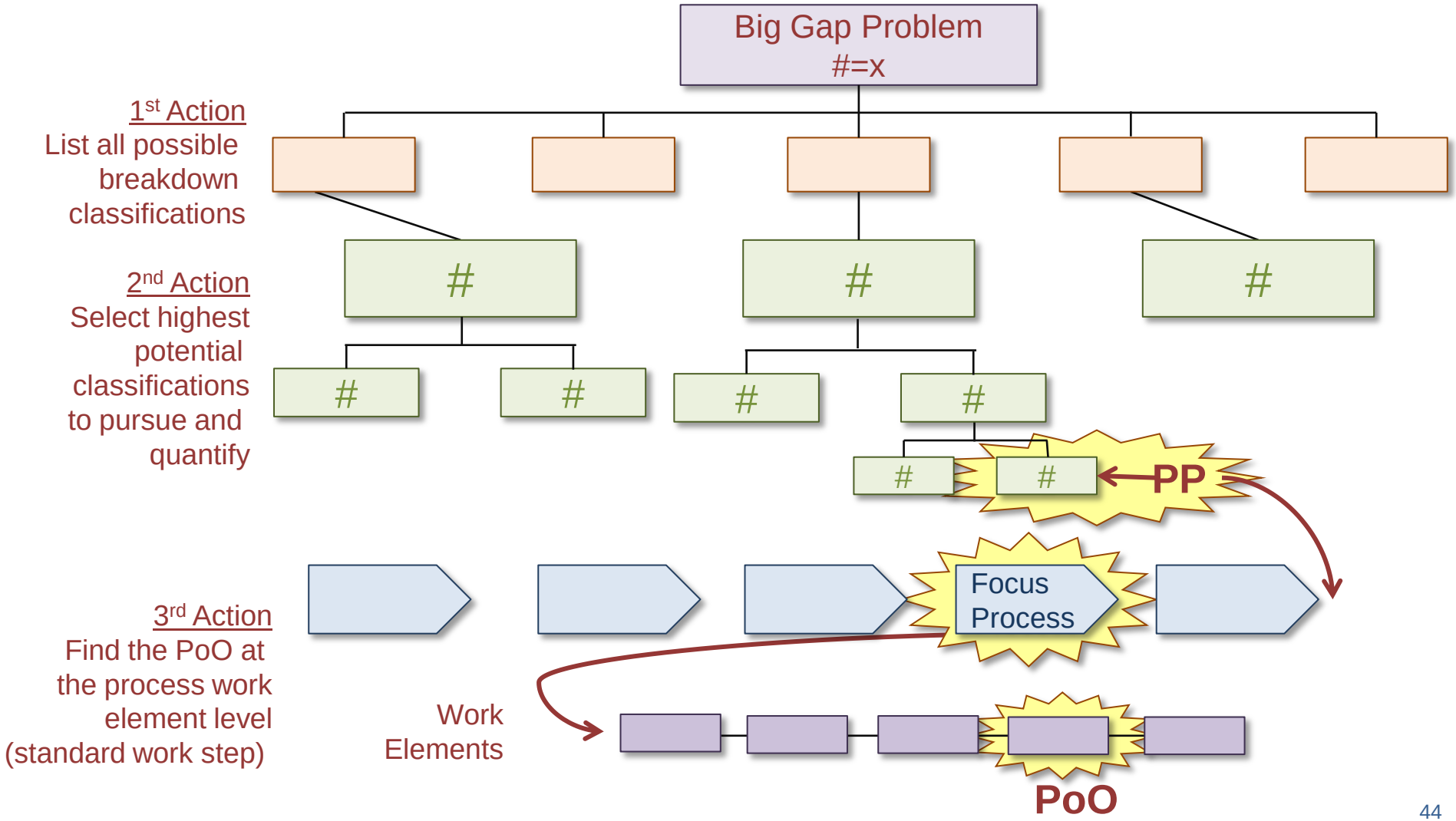
Where is Point of Occurrence?

Prioritized Problem at the Point of Occurrence

Why is Point of Occurrence important?

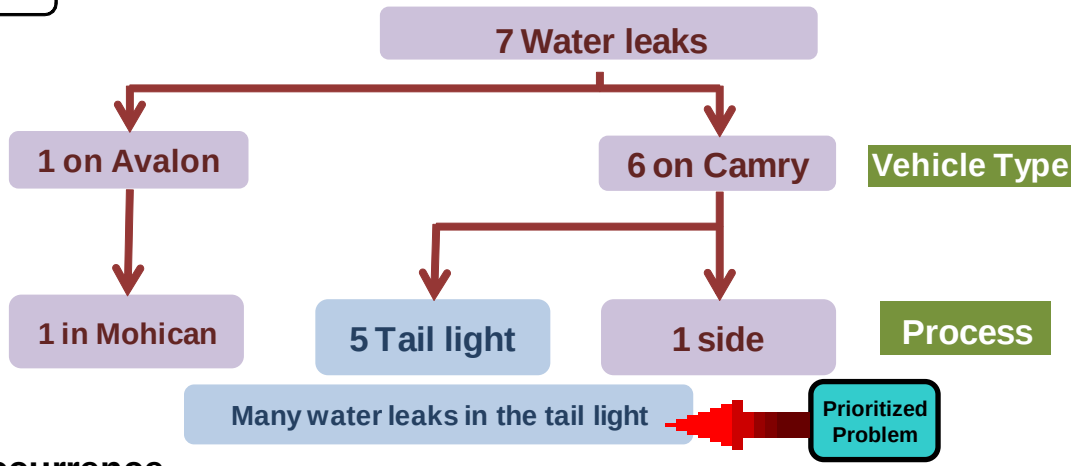
For efficient use of time & effort

How to Proceed with Step Two



Example: Step 2

2. Break Down the Problem



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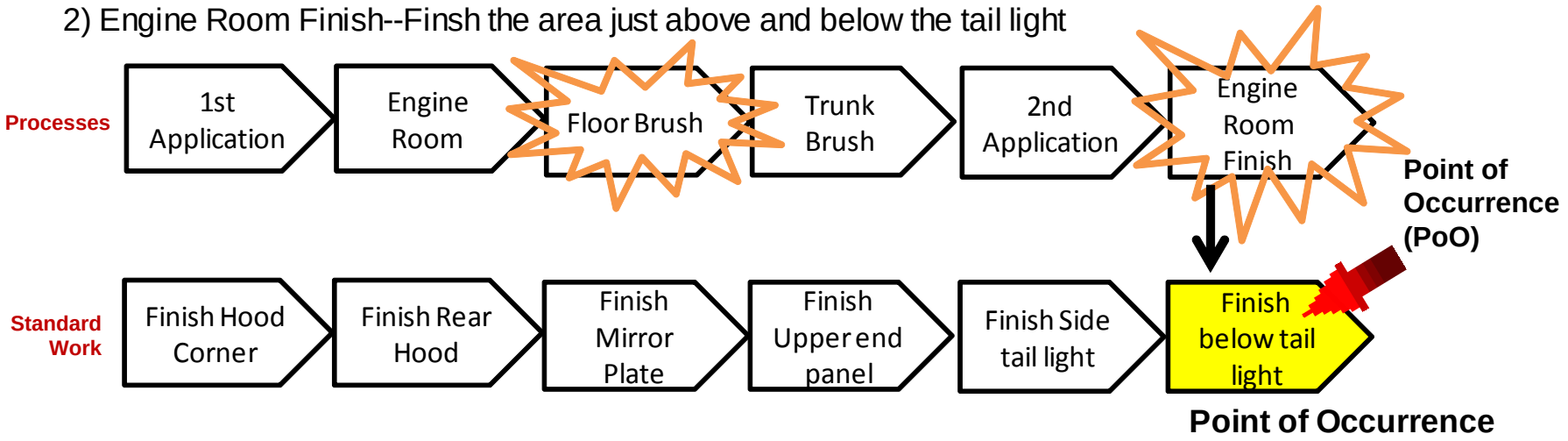
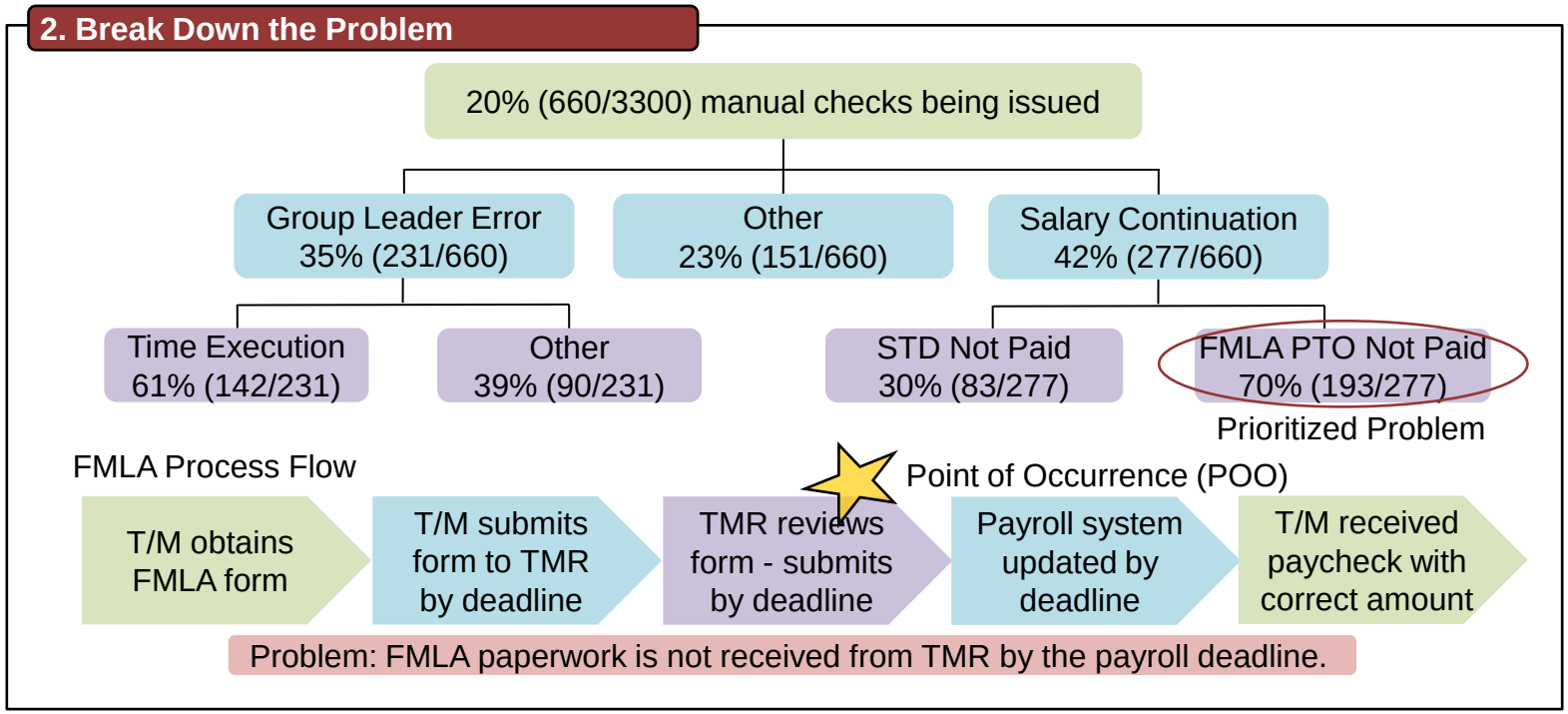


Example: Step 2



Step 3) Set a Target

8 Steps	Proceedings
Step 1. Clarify the problem	(1) Clarify the "Ultimate Goal" of your responsibilities & work (2) Clarify the "Standard" of your work (3) Clarify the "Current Situation" of your work (4) Visualize the gap between the "Current Situation" and the "Standard"
Step 2. Break down the problem	(1) Break down the problem (2) Identify the prioritized problem (3) Specify the point of occurrence by checking the process through GENCHI GENBUTSU
Step 3. Set a target	(1) Make a commitment (2) Set measurable, concrete and challenging targets

Step 3) Set a Target

1. Do not merely write down “what to do” as a target

~~All Employees will participate in cost reduction activities~~

The cost of food will be reduced 15% within this calendar year

What **How much** **When**

Step 3) Set a Target

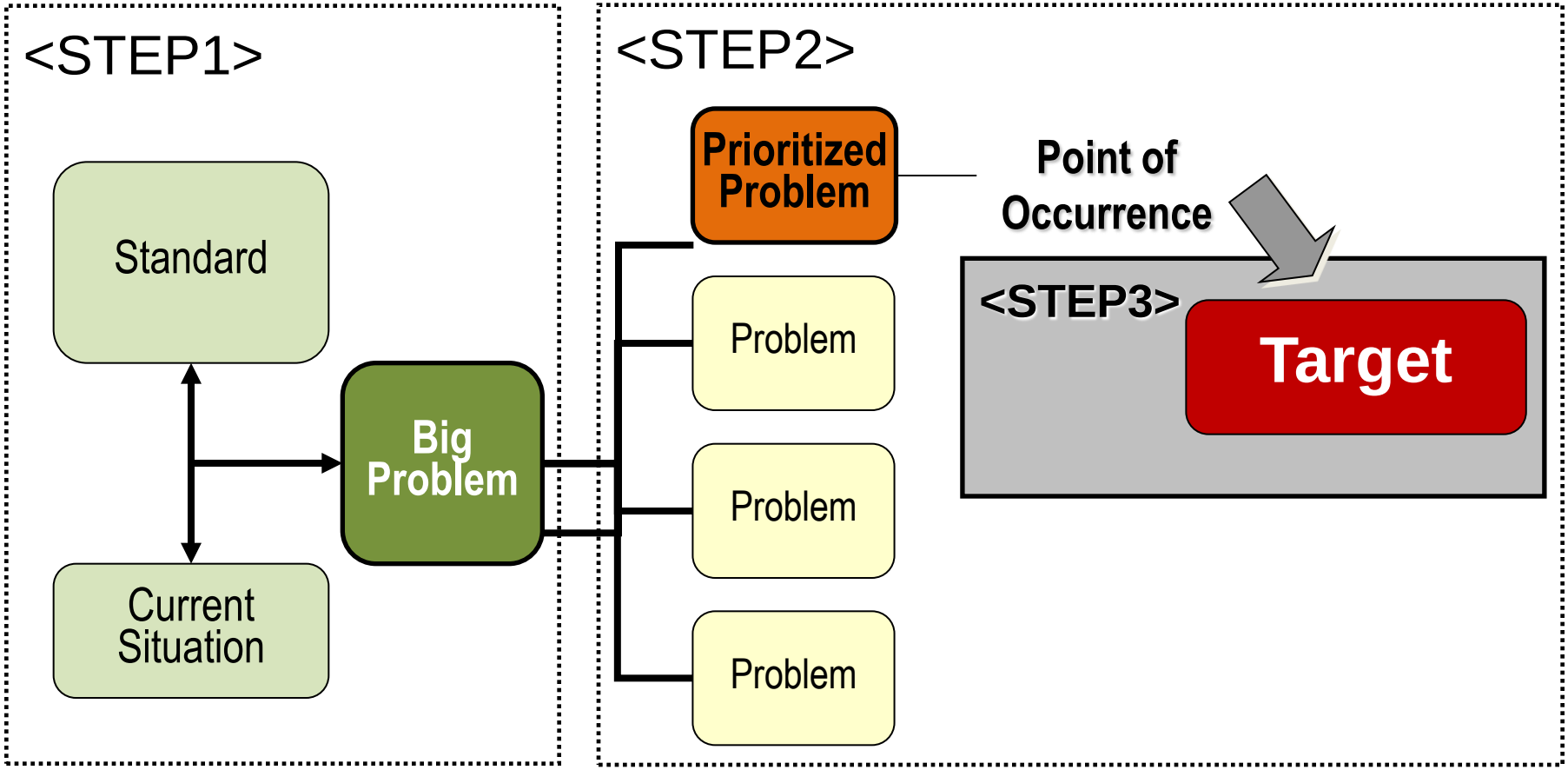
2. Do not set up the method as a target

~~Planning the rotation~~

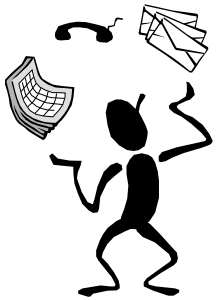
All employees will perform 5 evaluations per employee by March end

What **How much** **When**

Step 3) Set a Target



Step 3: Set a Target



Improvement of skills

All employees can find the 5 common body surface defects by June 30

Improvement in KAIZEN mind

5 or more suggestions per employee by December 31

Improvement in teamwork

100% participation rate for safety activity by July 31

Example: Step 3

3. Target Setting

Target: Eliminate 5 tail light area water leaks on Camry by 7/29

Example: Step 3

3. Target Setting

Target: Eliminate 100% late submissions of FMLA forms to meet payroll deadline by March 2009. (193 of 660 total gap)

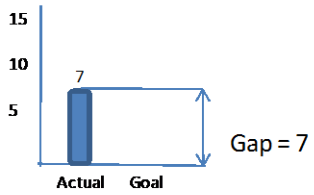
Example through Steps 1, 2, & 3

1. Clarify the Problem

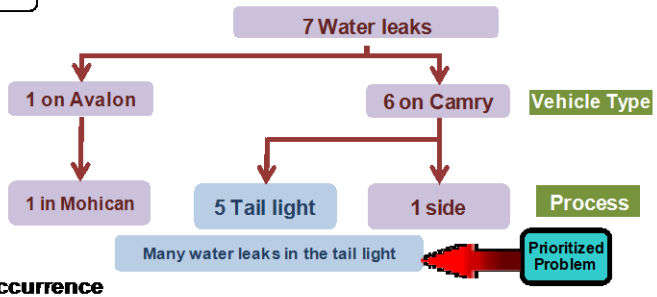
Ultimate Goal: No waterleaks in TMMK produced cars

Ideal Situation (Standard): Zero audit defects from Sealer area

Current Situation: 7 waterleaks on 7/28



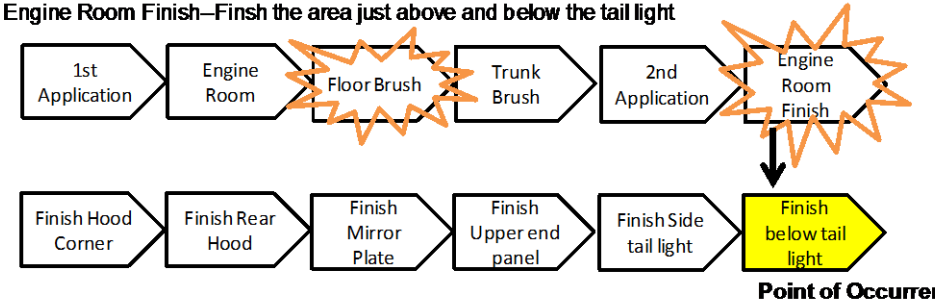
2. Break Down the Problem



Go and See Investigation for Point of Occurrence

1) Floor Brush–Finish lower seam on end panel

2) Engine Room Finish–Finsh the area just above and below the tail light



Point of Occurrence

3. Target Setting

Target: Eliminate 5 tail light area water leaks on Camry by 7/29

Example through Steps 1, 2, & 3

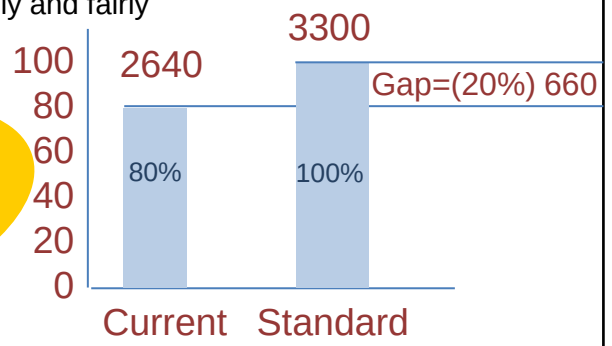
1. Clarify the Problem

Ultimate Goal: TMs are compensated for work completed and paid timely and fairly

Standard: 100% (3300) of TM's paychecks are deposited error free

Current Situation: 80% (2640) of TM's paychecks are deposited error free

GAP
20% (660) paychecks need a manual check to correct errors



2. Break Down the Problem

20% (660/3300) manual checks being issued

- Group Leader Error 35% (231/660)
  - Time Execution 61% (142/231)
  - Other 39% (90/231)
- Other 23% (151/660)
- Salary Continuation 42% (277/660)
  - STD Not Paid 30% (83/277)
  - FMLA PTO Not Paid 70% (193/277)

Prioritized Problem

FMLA Process Flow

Point of Occurrence (POO)

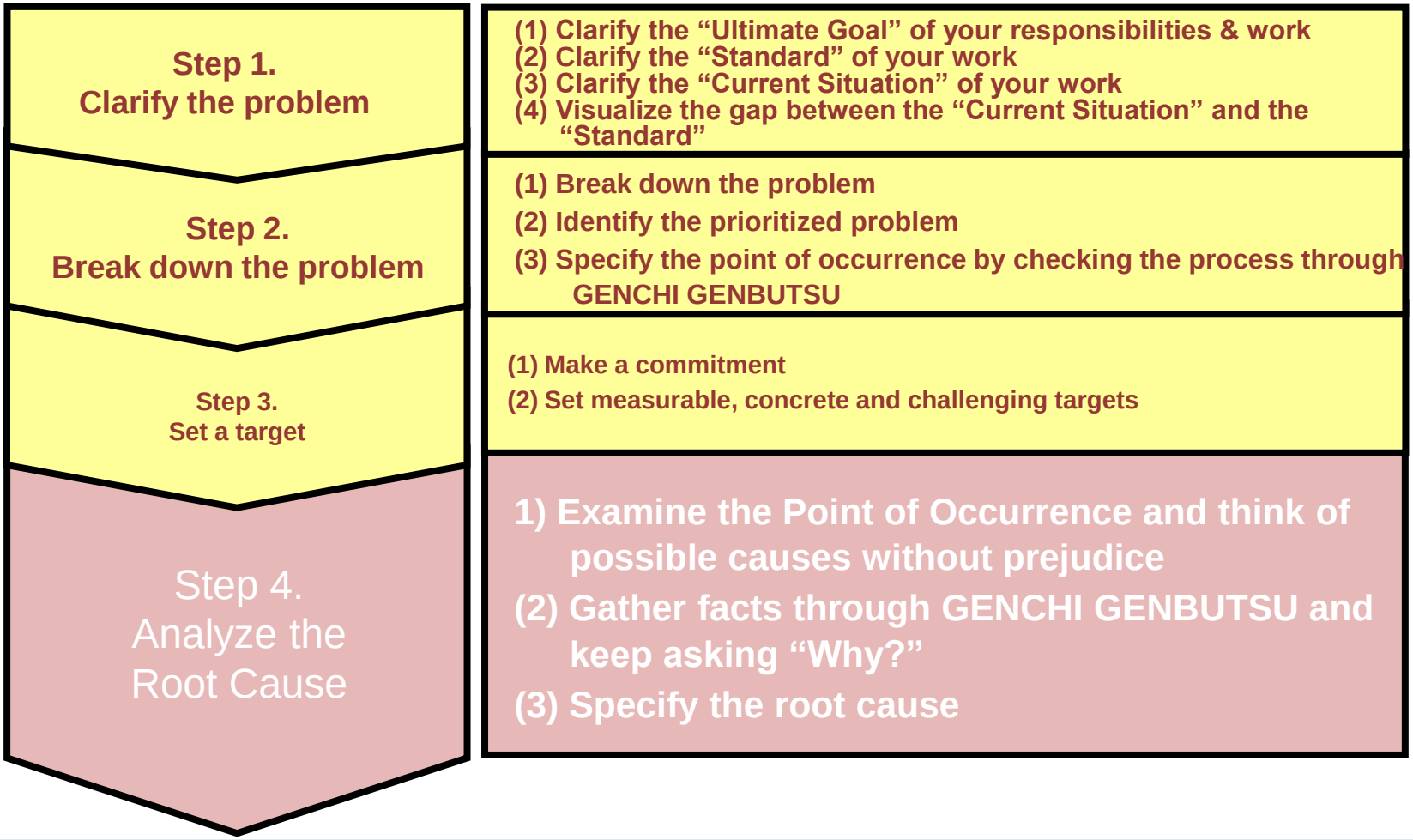
T/M obtains FMLA form → T/M submits form to TMR by deadline → TMR reviews form - submits by deadline → Payroll system updated by deadline → T/M received paycheck with correct amount

Problem: FMLA paperwork is not received from TMR by the payroll deadline.

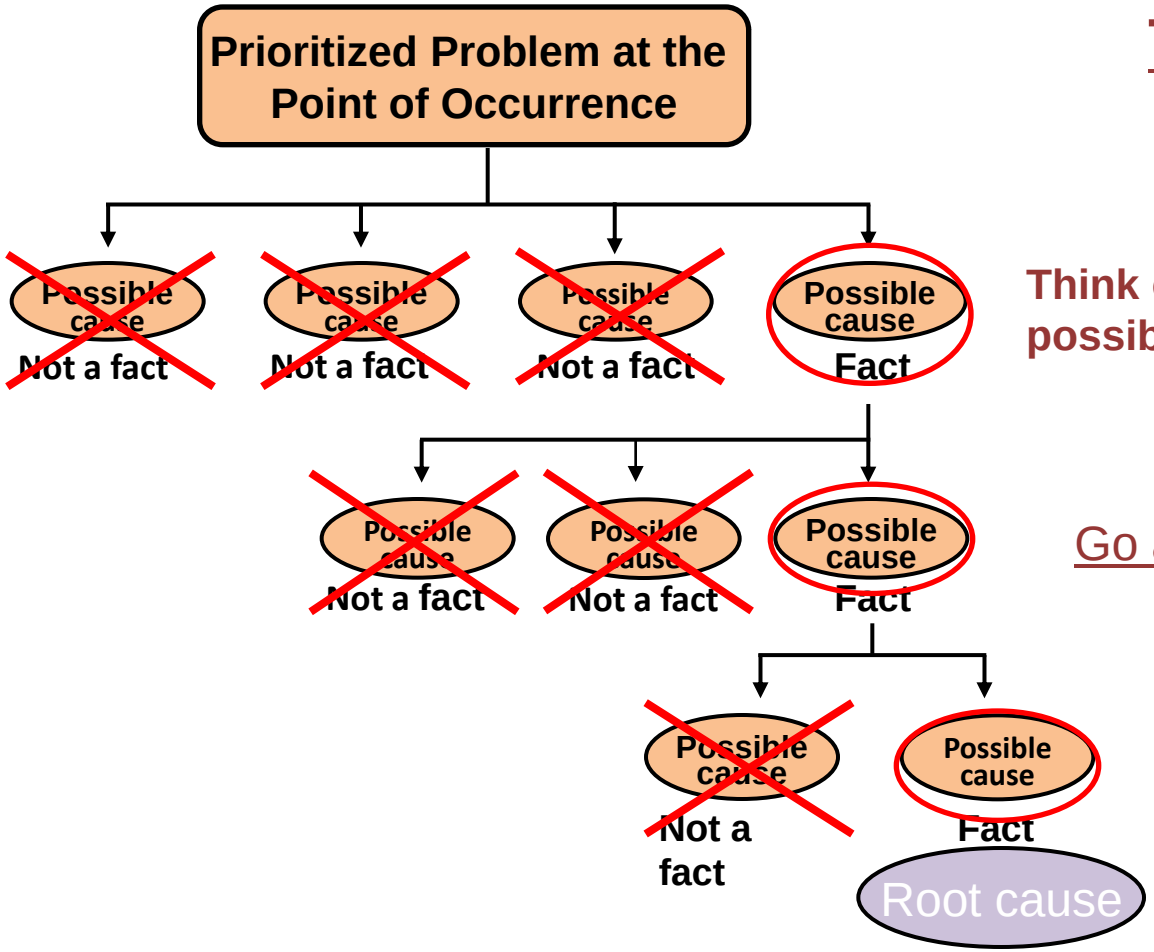
3. Target Setting

Target: Eliminate 100% late submissions of FMLA forms to meet payroll deadline by March 2009. (193 of 660 total gap)

Step 4) Analyze the Root Cause



Step 4) Analyze the Root Cause



Time for WHY

Think of all meaningful possible causes

Idle vs. informed brainstorming

Go and See to confirm

Repeat

Step 4) Analyze the Root Cause

1) Confirm the situation at the point of occurrence
   - Investigate the potential cause efficiently
   - Problem occurs continuously or erratically?
   - Problem occurs in repeatable cycles?
   - Look at “connecting points” between processes
   - Ask: “What has changed?”

Step 4) Analyze the Root Cause

2) Without any prejudice

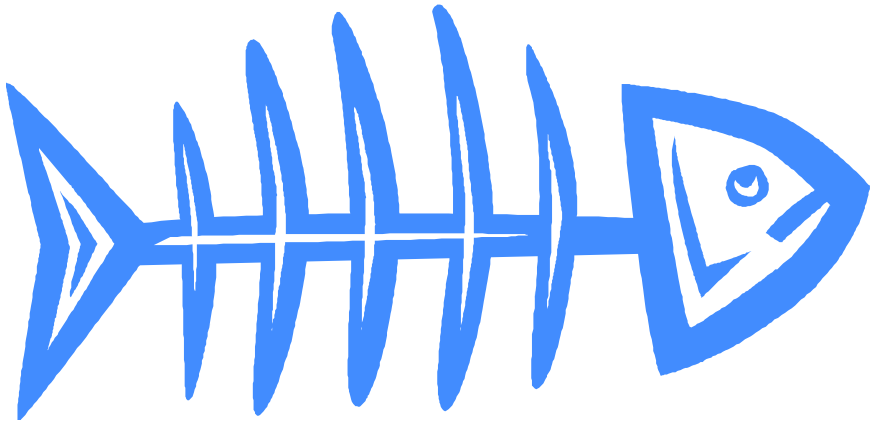
- ✕ Highly skilled employee, so can't be the cause
- ✕ Always been this way, so can't be the cause
- ✕ I just do/don't feel this could be the cause

Experiences and intuition are important, but do not analyze root cause without thinking deeply

Step 4) Analyze the Root Cause

3) Use “4M1E” to think about possible causes

Man (Human)
Machine
Material
Method
Environment



Step 4) Analyze the Root Cause

(Example) Bad polishing of painted parts

Man (Human):

Standard work being followed?

Machine:

RPMs correct?

Material:

Correct compound?

Method:

Polishing standard correct?

Environment:

Work place temperature correct?

Step 4) Analyze the Root Cause

Simply describe the facts

Example : Hand was caught in the clamp

(Why?)

X T/M was in a hurry, turned on the switch, then tried to adjust part after part had shifted

(Why?)

- **Hand was under the clamp**
- **The clamp moved**

Step 4) Analyze the Root Cause

Example: Welding robot stops in the middle of its operation.

Why?

A fuse in the robot has blown.

Why?

Circuit overloaded.

Why?

The bearings have damaged one another and locked up.

Why?

There was insufficient lubrication on the bearings.

Why?

Oil pump on robot is not circulating sufficient oil.

Why?

Pump intake is clogged with metal shavings.

Why?

Root Cause — **No filter on pump intake (as designed)**

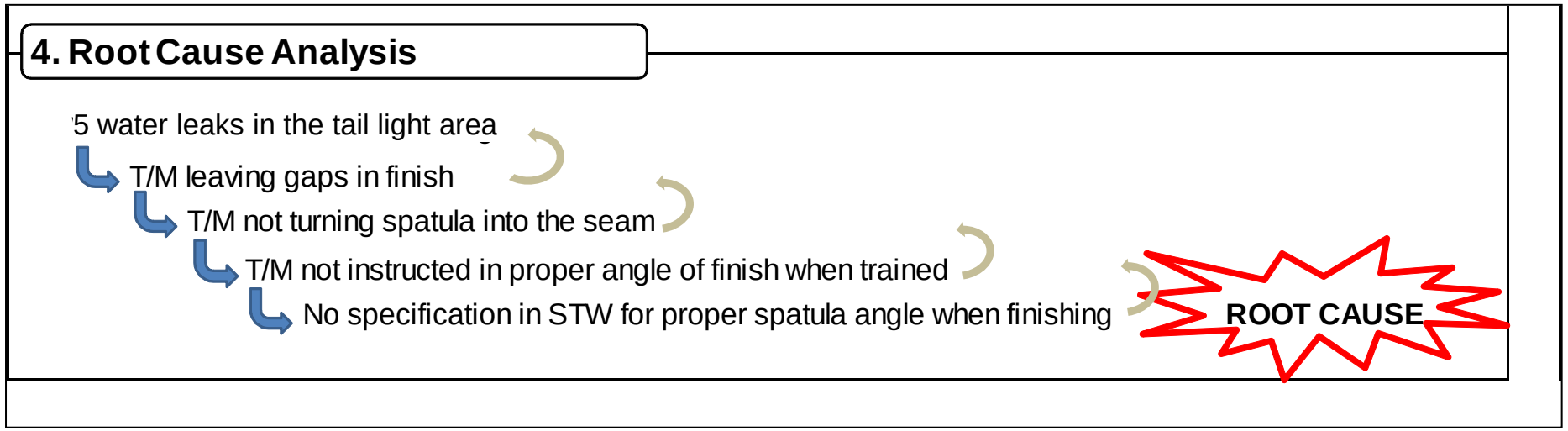
How to Proceed with Step 4

Action Items	Do These Things		
Item 1 Brainstorm possible causes	Think of all meaningful possible causes	Use best brainstorming • Fast paced • Time limited • Don't stop to discuss • Everyone participates	Narrow the list (combine/eliminate) to select possible causes
Item 2 Get input from job performers	Go to work area or bring key people to classroom start with prioritized problem at point of occurrence	Show the narrowed list of possible causes Ask: are these real/factual? What are other causes?	
Item 3 Select the most likely cause	Decide which is factual and within your control	Ask why the selected most likely cause is chosen	Repeat at each level until arriving at root cause – make "decision tree"
Item 4 Create "why chain" apply "therefore test"	Transfer results from "decision tree" into "5 Why chain"	Check logic with "therefore test"	Repeat/do over until logic flow is clear to the root cause

Two Products for Presenting Step 4

1. Root cause decision tree (result of brainstorming); be able to explain what was ruled out as well as what was selected
2. "5 Why Chain," root cause clearly labeled, with "therefore test" (see slides 63 & 64)

Step 4) Analyze the Root Cause



*Apply the "therefore" test to check thinking

Step 4) Analyze the Root Cause

4. Root Cause Analysis

FMLA paperwork is not received from TMR by the payroll deadline

- Form doesn't pass review
  - Form was submitted incorrectly
    - Part "D" not complete
      - T/M thought HR was to complete
        - Instructions not clear in Part "D"

*Apply the "therefore" test to check thinking

Step 5) Develop Countermeasures

8 Steps	Proceedings
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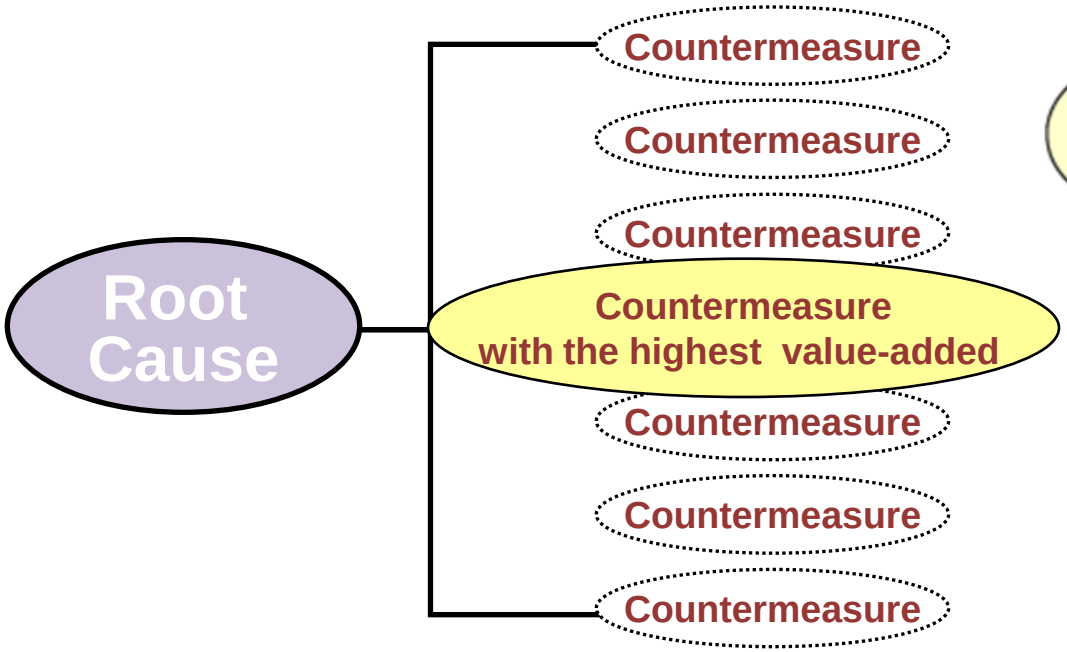
Step 5. Develop countermeasures	(1) Develop as many potential countermeasures as possible (2) Select the highest value added countermeasures (3) Build consensus with others (4) Develop a clear and detailed action-plan

Step 5) Develop Countermeasures

Procedure for developing countermeasures



Step 5) Develop Countermeasures

Develop as many potential countermeasures as possible

- Think: "what will eliminate the Root Cause"
- Don't deny potential countermeasures with preconceived ideas
- Key points when developing ideas
  - Clarify the variables/conditions
  - What can I change? Get advice from others
  - Are there any previously developed (and effective) countermeasures

Step 5) Develop Countermeasures

Develop as many potential countermeasures as possible

[Root cause]

The pallet storage area is not large enough

Perspective	Potential Countermeasure
Where	Move to a more spacious place
When	Reduce number of pallets by changing conveyance timing
What	Make more space by making pallet shape more compact
How	Make more space by tidying up pallets

Step 5) Develop Countermeasures

Select the highest value added Countermeasures

Evaluate all potential Countermeasures

Consider	Question
Effectiveness	Does it truly eliminate the Root Cause? Does it meet the Target?
Cost/Manpower	Does it consider cost and time ? Does it consider the number of people required to implement/sustain
Risk	What are the risks when implementing Safety? Quality? Workability? What is the impact on previous or following work processes?

Step 5) Develop Countermeasures

Select the highest value-added Countermeasures

Make an evaluation matrix: Countermeasure for assembling mismatched parts

Factors / Options			Risk					
	Expected effort	Cost / Man-hour	Technical difficulty	Quality problem	Safety problem	Workability	Problems to other processes	Overall judgment
Change parts color	△	△	△	○	○	○	△	△
Change parts shape	X	X	X	○	○	X	X	X
Change sequence of operation	○	△	○	○	○	○	○	◎

○ Good
△ Acceptable
X NG
◎ Optimal

Confirm the facts by interviewing related people and departments

Step 5) Develop Countermeasures

Build consensus with others

- Explain and discuss plans with all relevant parties
- Set up a cross functional committee
- Organize the meeting to present the analysis & ideas
- Hold update meetings to share latest info/progress

Present to management for approval to go forward—

A-3 format is a standardized and efficient tool

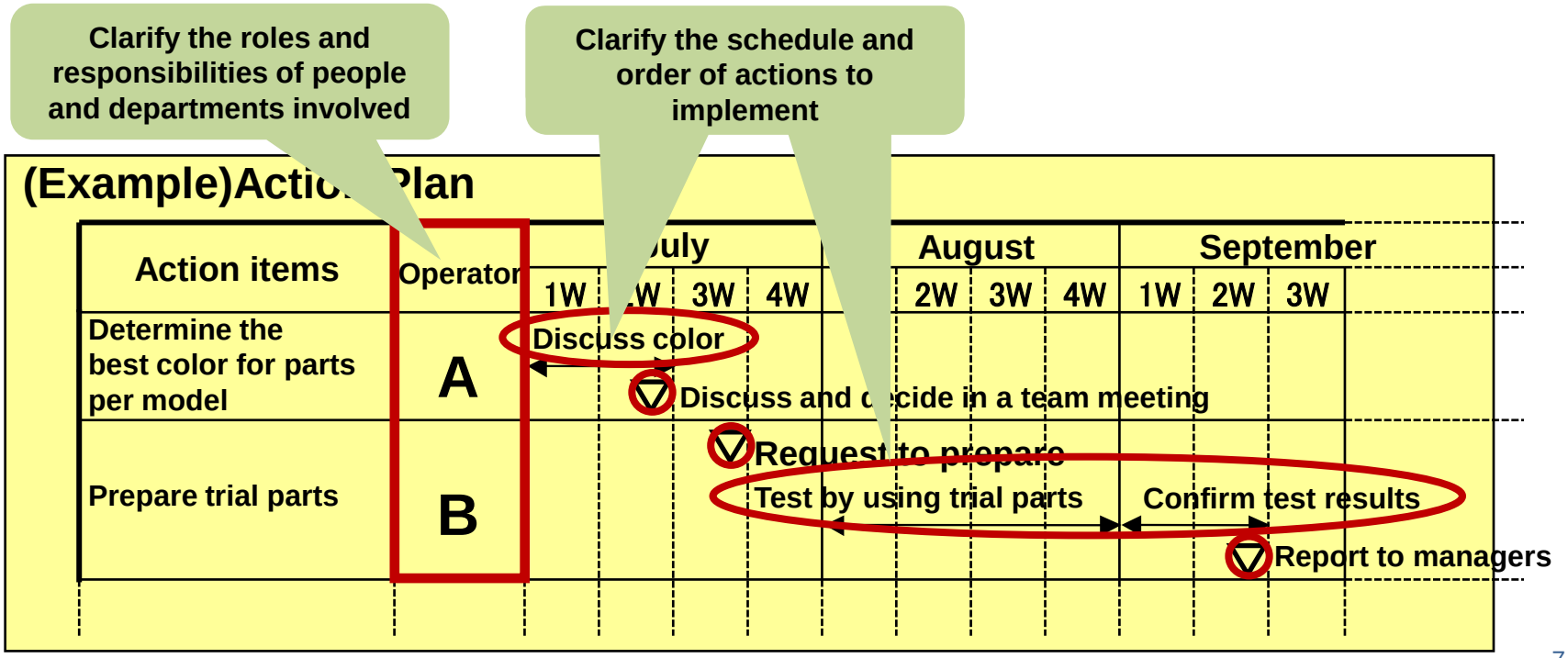
Note: thru Process step 5, planning phase is completed

Step 5) Develop Countermeasures

Develop a clear and detailed action-plan

When creating the action-plan, be sure to clearly identify the four W's of the countermeasures

Who – What – Where – When?



Example: Step 5

5. Develop Countermeasure

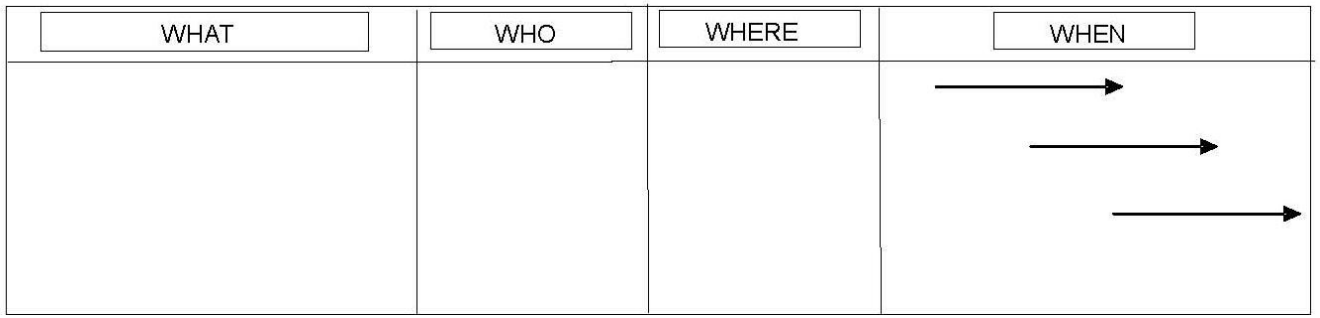
R.C. No spec in standard work for spatula angle

	Effort	Cost	Safety	Effectiveness	Overall
Add inspection process	Δ	Δ	O	Δ	Δ
Train T/M's in correct angle to hold spatula	Δ	O	O	O	O
Repair in CART	X	X	O	X	X

Temp Action

Add inspection key points at quality gate and feedback to T/M's - 7/28

Make a Plan



Example: Step 5

5. Countermeasure Options & Evaluation

Options	Effectiveness	Budget	Speed	Quality	Overall Assessment	Comments
Post clearer instructions on T/M board	X	O	O	X	X	-Create awareness of enhancement -Help T/Ms who review board -Not helpful at home
Update instructions on form	△	O	O	△	△	-Would document enhancement as new standard -Dependent on T/M reading it
Have TMR instruct T/M	△	O	O	△	△	-Verbally communicate the enhancement -Cannot ensure that T/M will remember the instructions if not written down
Update instructions on form along with TMR communications	O	O	△	O	O	-Would document enhancement as new Standard while confirming the instructions

Step 6) See Countermeasures Through

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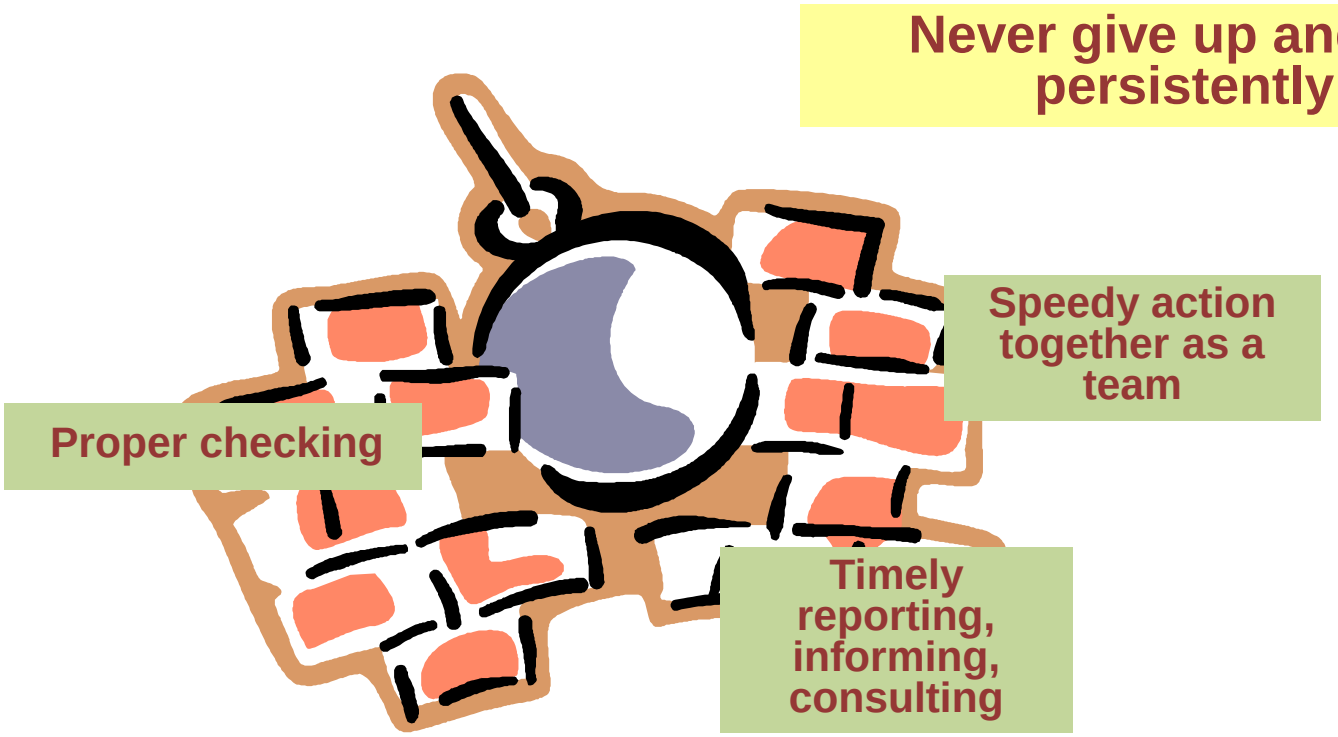
Step 6) See Countermeasures Through

8 Steps	Proceedings
Step 6. See countermeasures through	(1) With all members united, implement countermeasures with speed and persistence (2) Share information with others by informing, reporting and consulting (3) Never give up, and proceed to the next step quickly

Step 6) See Countermeasures Through

Prompt response from the team

Be persistent



Step 6) See Countermeasures Through

Implement Countermeasures with speed and Persistence after consensus (*Nemawashi)* building

1) **Concentrate efforts**
2) **Check progress regularly**

   "On-the-floor" standup at the progress boards — relate to "jishuken" room

Step 6) See Countermeasures Through

Share information with others by informing , reporting and consulting

- **Share bad news quickly**
- **Contingency plans for unforeseen risks/events**

Step 6) See Countermeasures Through

Never give up. If you cannot achieve the expected results, try other countermeasure ideas

1. Planned trial and error is OK
2. Loop back in process if problem develops
3. Importance of the culture—keep going, don't pull the plug
4. Correct process = good results!!

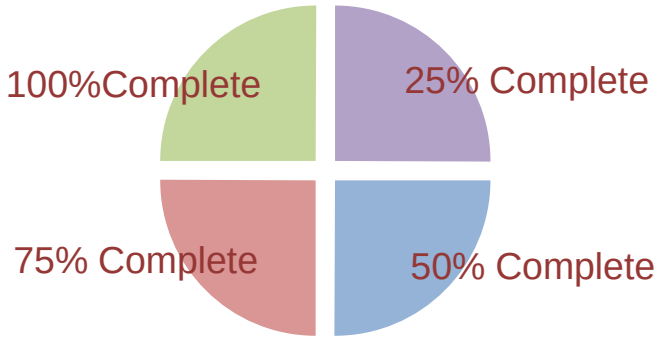
Example: Step 6

6. See Countermeasure Through

Countermeasure Plan - Train T/M's in correct spatula angle

What	Who	When	Status
Rewrite Standard Work	T/L	7/28	100%
Develop Standard Work Key Points	T/L	7/29	100%
Train T/M's	T/L	7/30&31	100%
Check for 3 Shifts	T/L	8/3	100%
Remove Temp Action	T/L	7/30	100%

Additional tracking method -



Example: Step 6

6. Action Plan

Item (What) (When)	Resp (Who)	Timing W1	W2	W3	W4	W5	W6	W7	W8
Draft form with clearer instructions	TH	→ ▲							
Sample T/M response; revise as needed	TH			→	△				
Consensus/Approval throughout HR	RK				→		△		
Coordinate communication method with TMR and roll out	SE							→	△
Progress Checks	BJ	▲	▲	△	△	△	△	△	△

Step 7) Evaluate Both Results and Processes

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Step 7) Evaluate Both Results and Processes

8 Steps	Proceedings
Step 6. See countermeasures through	(1) With all members united, implement countermeasures with speed and persistence (2) Share information with others by informing, reporting and consulting (3) Never give up, and proceed to the next step quickly
Step 7. Evaluate both results and processes	(1) Evaluate the results and the processes, and share it with members involved (2) Evaluate from three key perspectives: customer's, 8 step's, and your own (3) Understand the reasons of success and failure

Step 7) Evaluate Both Results and Processes

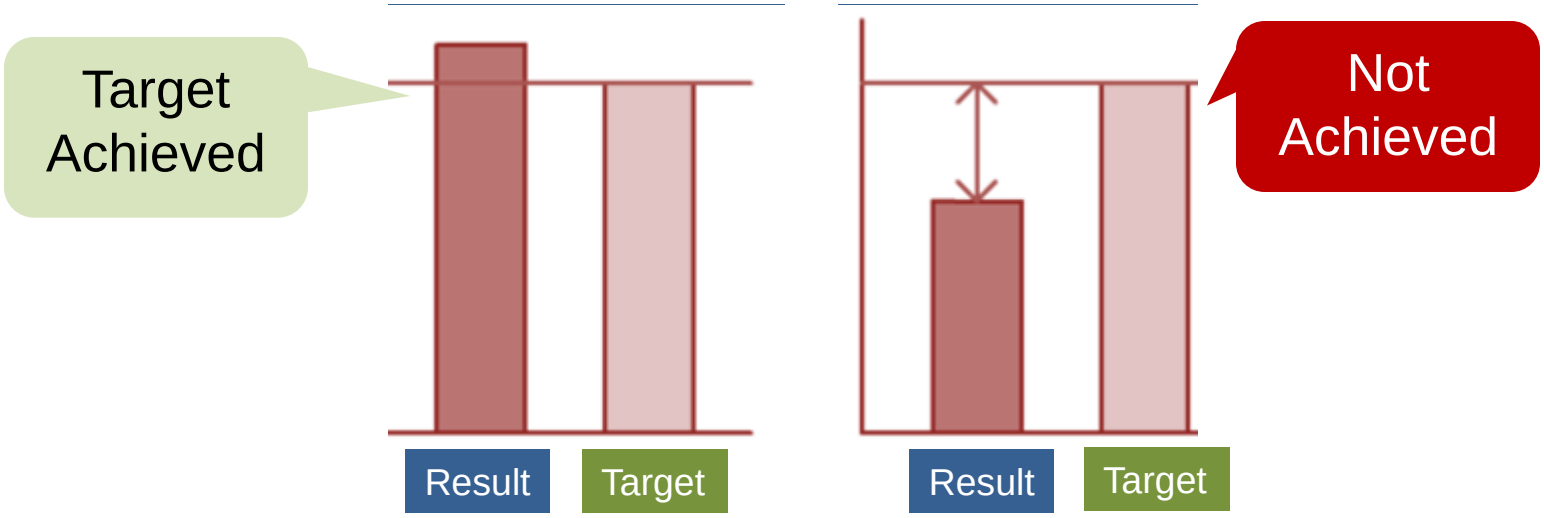
～Evaluate both results and processes and learn from both success and failure ～

Step 7) Evaluate Both Results and Processes

Evaluate results and processes, and share it with stakeholders

1) Evaluate the results

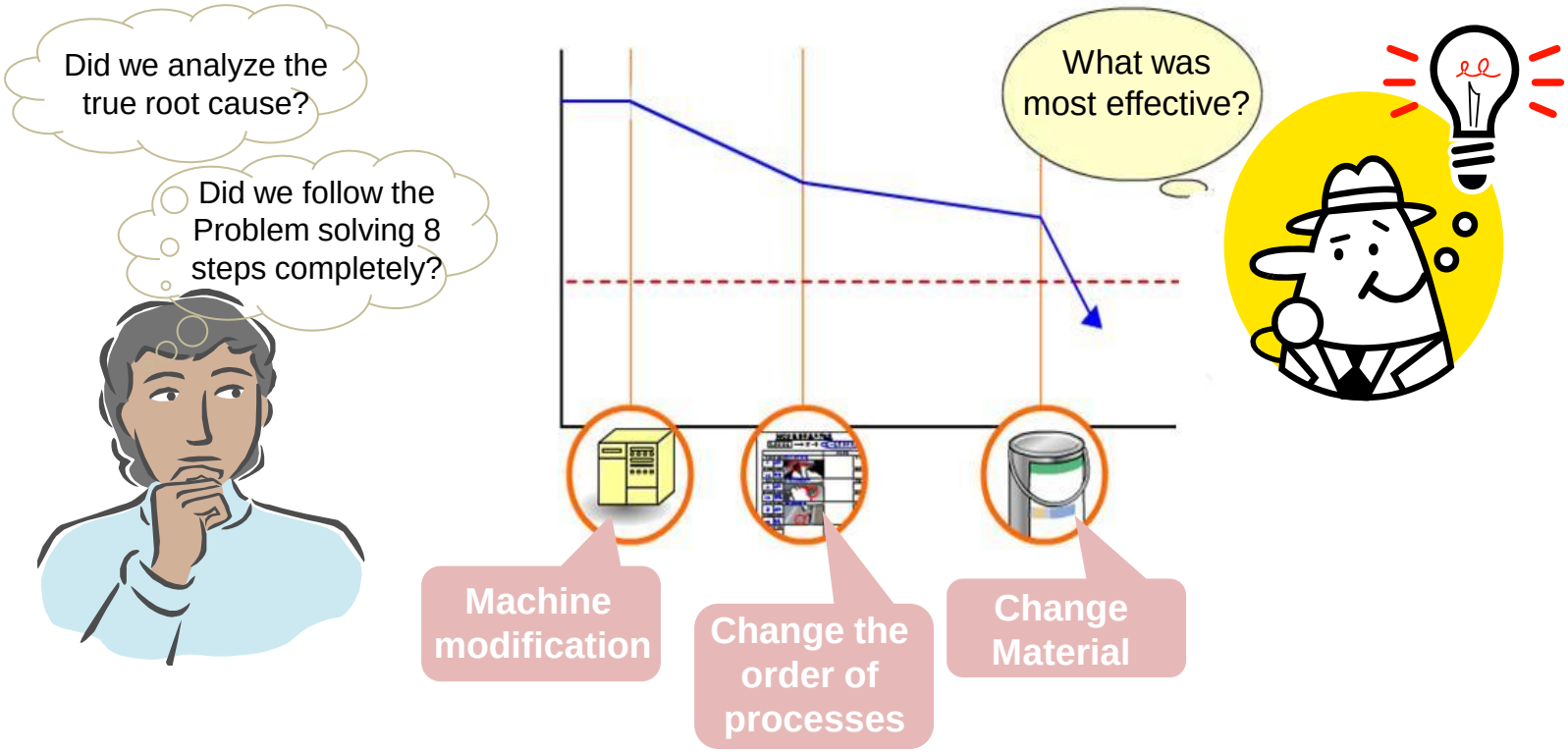
Evaluate whether or not the target was achieved



Step 7) Evaluate Both Results and Processes

Evaluate results and process, and share it with stakeholders

2) Evaluate the process for achieving the results



Step 7) Evaluate Both Results and Processes

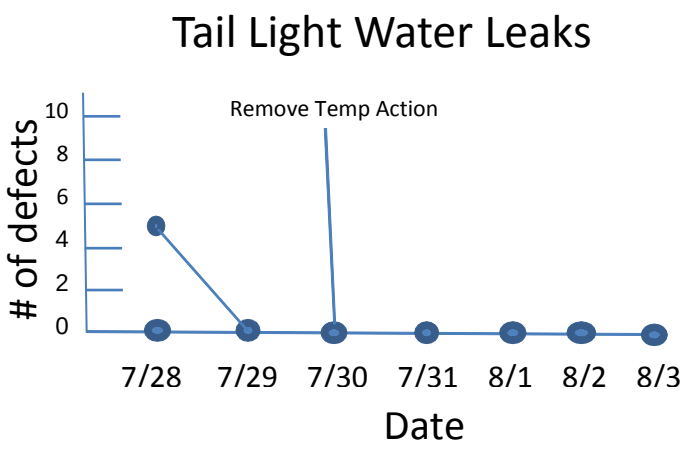
Evaluate results and processes, and share it with stakeholders

3) Confirm positive and negative effects

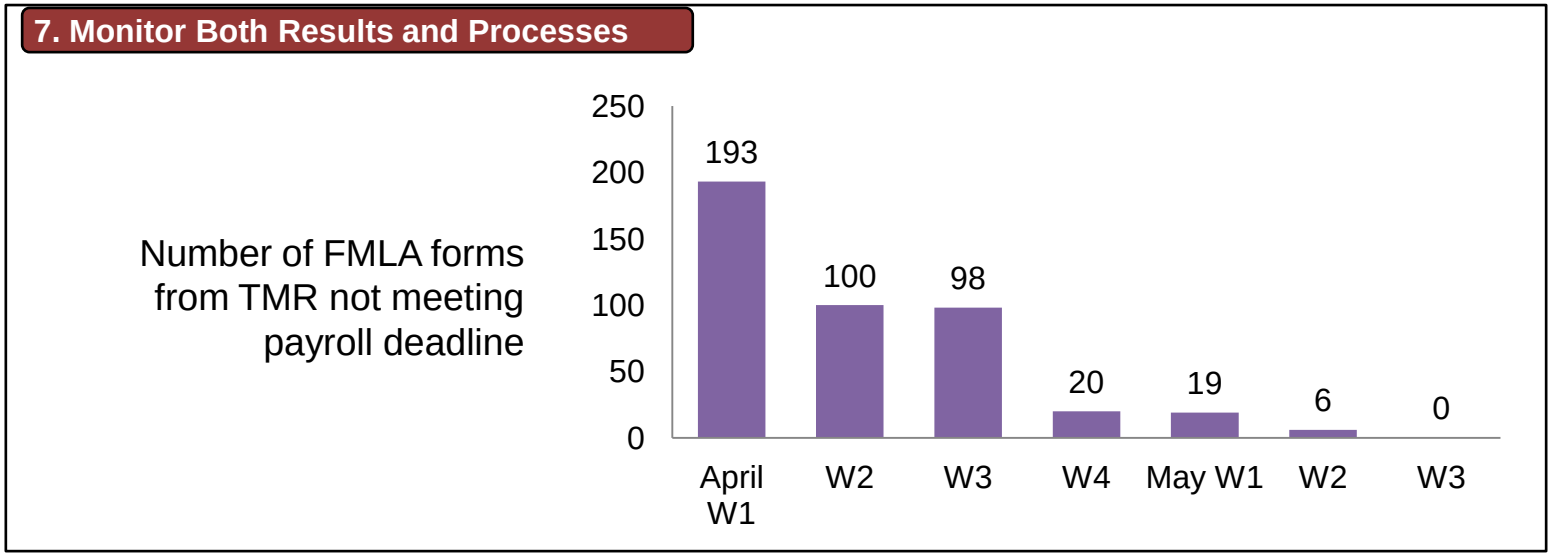
Example: Step 7

7. Monitor Both Results and Processes

Tail Light Water Leak Tracking	
7/28	5 defects
7/29	0 defects
7/30	0 defects
7/31	0 defects
8/1	0 defects
8/2	0 defects
8/3	0 defects



Example: Step 7



Step 7 Expectation

Develop a tracking chart or graph (make the standard/target easy to see

- What data is needed?
- Where do we get the data?
- What is the required time period?
- Who will collect and summarize data?

Step 8) Standardize Successful Processes

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Step 8) Standardize Successful Processes

8 Steps	Proceedings
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Step 8. Standardize successful processes	(1) Set successful processes as new standard (2) Share the new standard (YOKOTEN) (3) Start the next round of KAIZEN

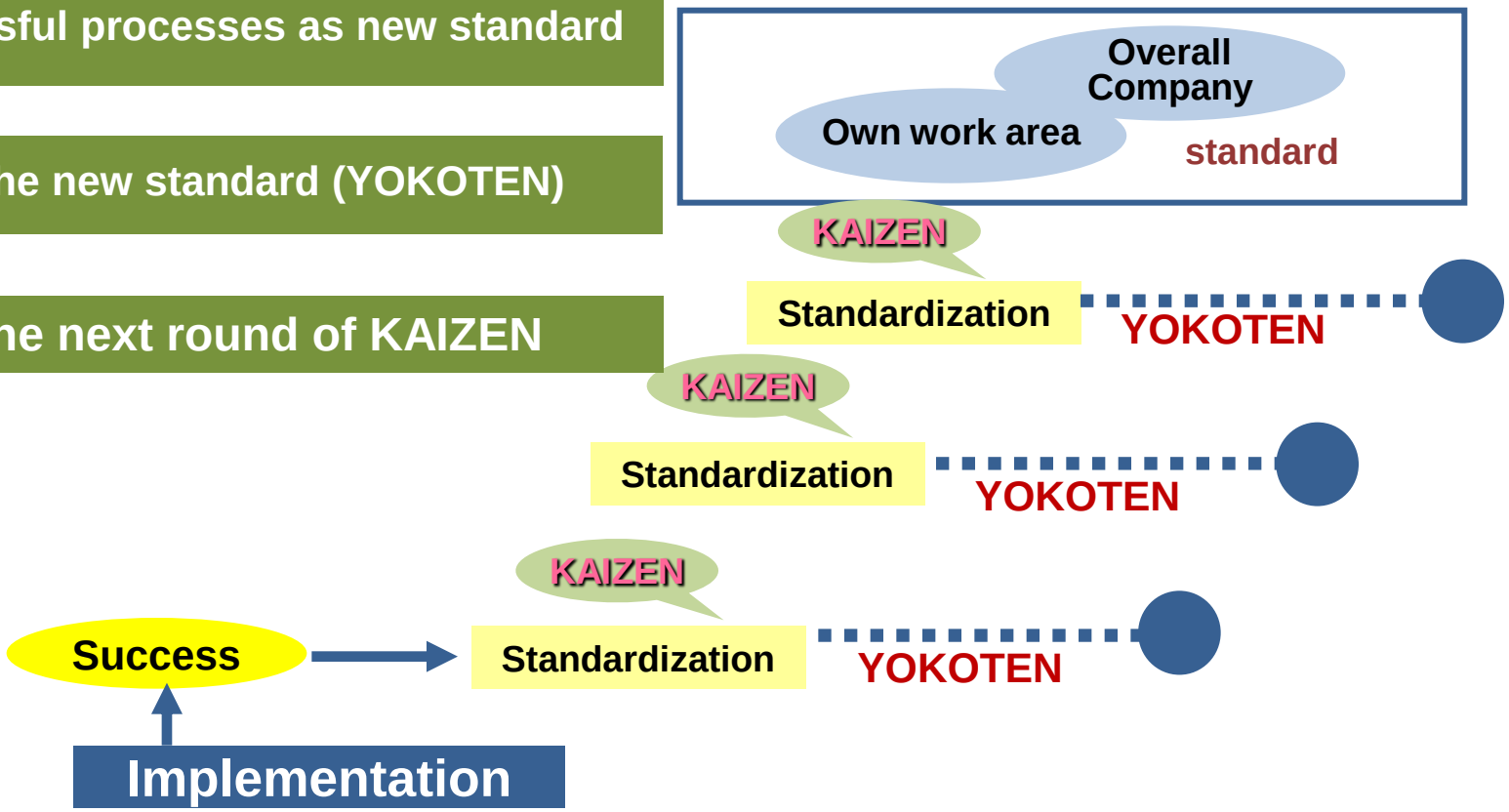
Step 8) Standardize Successful Processes

Procedure for Standardizing successful processes

(1) Successful processes as new standard

(2) Share the new standard (YOKOTEN)

(3) Start the next round of KAIZEN



Step 8) Standardize Successful Processes

Set successful process changes as new Standards

Anyone, anytime, without muda, mura, or muri can implement the method/standard

< Examples of standardization >

Manual **Forms** **Checklists** **Flow-chart**

Step 8) Standardize Successful Processes

Share the new Standard (YOKOTEN)

<Examples of YOKOTEN>

Meeting

Hard copy or Electronic Circulation

To opposite shift

Step 8) Standardize Successful Processes

Process 3. Start the next round of KAIZEN

Kaizen

Standardize

Solve one problem

Repetition of problem solving
Process to get best result

Example: Step 8

8. Standardize Successful Processes

Yokoten: Contact other NAMC's to confirm no problem

Follow-up: Have Pilot add special check for finish angle in Standardized work development

Example: Step 8

8. Standardize Successful Processes

Document reason for adding additional instructions to form
Standardize electronic form in database with revision date
Yokoten: Share the new form with other NAMC's by June 30

Example: Steps 1-8

1. Clarify the Problem

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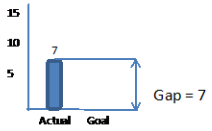
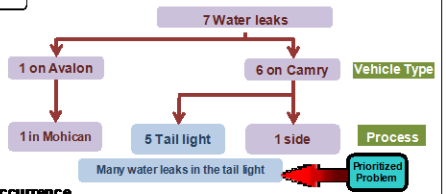
Ideal Situation (Standard): Zero audit defects from Sealer area

Current Situation: 7 waterleaks on 7/28



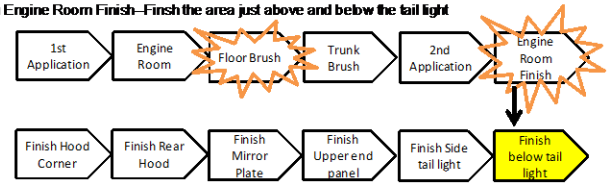
2. Break Down the Problem



Go and See Investigation for Point of Occurrence

1) Floor Brush–Finish lower seam on end panel

2) Engine Room Finish–Finsh the area just above and below the tail light



3. Target Setting

Target: Eliminate 5 tail light area water leaks on Camry by 7/29

4. Root Cause Analysis

5 water leaks in the tail light area

- T/M leaving gaps in finish
  - T/M not turning spatula into the seam
    - T/M not instructed in proper angle of finish when trained
      - No specification in STW for proper spatula angle when finishing

ROOT CAUSE

5. Develop Countermeasure

R.C. No spec in standard work for spatula angle

	Effort	Cost	Safety	Effectiveness	Overall
Add inspection process	Δ	Δ	O	Δ	Δ
Train T/M's in correct angle to hold spatula	Δ	O	O	O	O
Repair in CART	X	X	O	X	X

Temp Action

Add inspection key points at quality gate and feedback to T/M's - 7/28

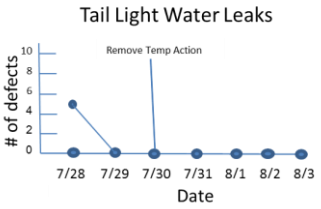
6. See Countermeasure Through

Countermeasure Plan - Train T/M's in correct spatula angle

What	Who	When	Status
Rewrite Standard Work	T/L	7/28	100%
Develop SWES with Key Points	T/L	7/29	100%
Train T/M's	T/L	7/30&31	100%
Check for 3 Shifts	T/L	8/3	100%
Remove Temp Action	T/L	7/30	100%

7. Monitor Both Results and Processes

Tail Light Water Leak Tracking	
7/28	5 defects
7/29	0 defects
7/30	0 defects
7/31	0 defects
8/1	0 defects
8/2	0 defects
8/3	0 defects



8. Standardize Successful Processes

Yokoten: Contact other NAMC's to confirm no problem

Follow-up: Have Pilot add special check for finish angle in Standardized work development

Example: Steps 1-8

Name:
Dept. & Resp.:
Date:

Title: Reducing Manual Check Printing

MGR: TL:
Asst. MGR: TM:
GL: TM:

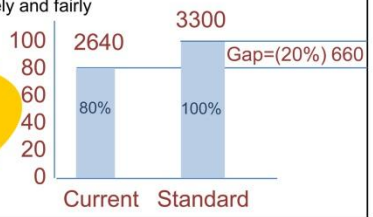
1. Clarify the Problem

Ultimate Goal: TMs are compensated for work completed and paid timely and fairly

Standard: 100% (3300) of TM's paychecks are deposited error free

Current Situation: 80% (2640) of TM's paychecks are deposited error free

GAP
20% (660) paychecks need a manual check to correct errors



2. Break Down the Problem

20% (660/3300) manual checks being issued

- Group Leader Error 35% (231/660)
  - Time Execution 61% (142/231)
  - Other 39% (90/231)
- Other 23% (151/660)
- Salary Continuation 42% (277/660)
  - STD Not Paid 30% (83/277)
  - FMLA PTO Not Paid 70% (193/277) — Prioritized Problem

FMLA Process Flow

Point of Occurrence (POO)

T/M obtains FMLA form → T/M submits form to TMR by deadline → TMR reviews form - submits by deadline → Payroll system updated by deadline → T/M received paycheck with correct amount

Problem: FMLA paperwork is not received from TMR by the payroll deadline.

3. Target Setting

Target: Eliminate 100% late submissions of FMLA forms to meet payroll deadline by March 2009. (193 of 660 total gap)

4. Root Cause Analysis

FMLA paperwork is not received from TMR by the payroll deadline
- Form doesn't pass review
  - Form was submitted incorrectly
    - Part "D" not complete
      - T/M thought HR was to complete
        - Instructions not clear in Part "D"

5. Countermeasure Options & Evaluation

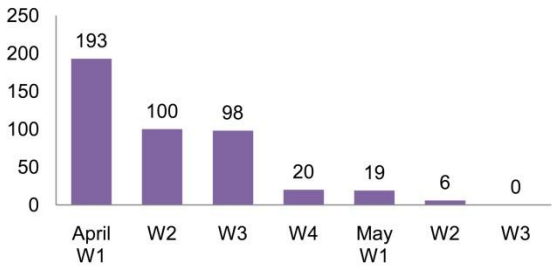
Options	Effectiveness	Budget	Speed	Quality	Overall Assessment	Comments
Post clearer instructions on T/M board	X	O	O	X	X	-Create awareness of enhancement -Help T/Ms who review board -Not helpful at home
Update instructions on form	Δ	O	O	Δ	Δ	-Would document enhancement as new standard -Dependent on T/M reading it
Have TMR instruct T/M	Δ	O	O	Δ	Δ	-Verbally communicate the enhancement -Cannot ensure that T/M will remember the instructions if not written down
Update instructions on form along with TMR communications	O	O	Δ	O	O	-Would document enhancement as new Standard while confirming the instructions

6. Action Plan

Item (What) (When)	Resp (Who)	Timing: Feb W1	W2	W3	W4	March W1	W2	W3	W4
Draft form with clearer instructions	TH	→ ▼							
Sample T/M response; revise as needed	TH		→ ▼						
Consensus/Approval throughout HR	RK				→ ▼				
Coordinate communication method with TMR and roll out	SE							→ ▼	

7. Monitor Both Results and Processes

Number of FMLA forms from TMR not meeting payroll deadline



8. Standardize Successful Processes

Document reason for adding additional instructions to form
Standardize electronic form in database with revision date
Yokoten: Share the new form with other NAMC's by June 30

Summary

The 8 Step Process…

A systematic pattern of work that integrates the wisdom of all "team members" resulting in continual growth and increased job satisfaction

Contact Information

Lean Systems Program
College of Engineering
University of Kentucky
220 Robotics Bldg.
Lexington, KY 40506-0108
Phone: 859-257-4886
Fax: 859-323-1035
Email: sdunn@engr.uky.edu
www.lean.uky.edu