



IMPROVING QUALITY USING SAFESTART TECHNIQUES

John McGillivray
SafeStart Consultant

OPENING COMMENTS

- Searching for some nuggets at a conference?
- Trying to figure how to make some great sounding ideas work in the real world?

My goal is to deposit some hard earned wisdom in your account over the next 75 minutes.



HAVE YOU EVER CONSIDERED?

Our jobs are pretty similar to a person's who rehabs homes for a living.

Someone who is dissatisfied with a structure hires us to change it.

What's the structure we fix up?

- A company's culture



WHAT IS CULTURE?

The **ingrained** beliefs and actions that dictate the “way we do things around here.”

It’s the foundation upon which a company operates.

A foundation needs to be strong if you want what you are building to last.

Good cultures, like foundations, are intentionally built.



MY WORLD

About 1 out of 3 shop people were getting hurt every year.

No one wanted to get hurt.

The ingrained beliefs and actions (the culture) needed to change to stop the injuries.

If we didn't change the foundation, nothing we did would be effective or last.



WHERE TO START THE REBUILD

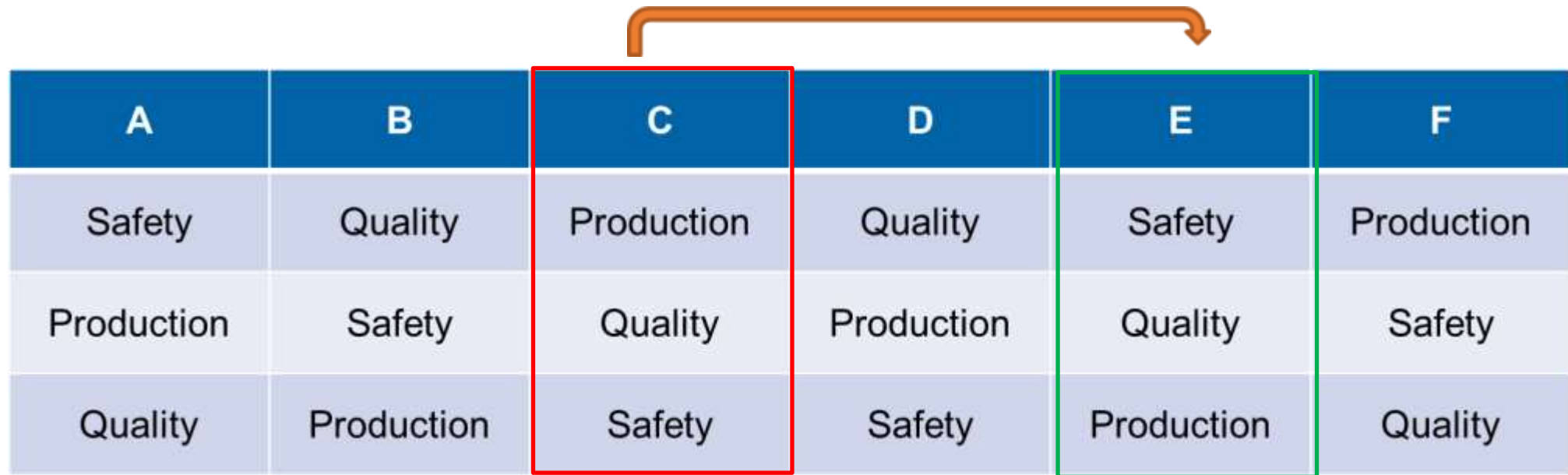
Who drives an organization's culture?

- Leaders, through words and actions



WHAT'S THE MESSAGE?

What do you think people heard most about from leaders?



A	B	C	D	E	F
Safety	Quality	Production	Quality	Safety	Production
Production	Safety	Quality	Production	Quality	Safety
Quality	Production	Safety	Safety	Production	Quality

'HOW' MATTERS

Leaders were taught to influence **how** someone performed a job, both from a safety and a quality perspective.

Make **how** matter as much as **if** the job was done and done on time.

"If it's important to my boss, it becomes important to me."



MAKING THE CONNECTION

How much time do leaders spend dealing with the consequences of their own or their team's errors?

Recognize that the same human factors cause both safety and quality errors.

Once people make the connection, things can rapidly improve.

That connection is **not** always intuitive and therefore needs to be taught.

**Quality
Errors Dropped**

79%

In ~24 Months

TEACHING PEOPLE TO MAKE THE CONNECTION

Key Concepts

- Performance is influenced by human factors
- States lead to errors which increases the risk of undesired outcomes
- Multiple undesired outcomes can be triggered by the same event (aka the ripple effect)
- Using the CERTs to reduce the risk of undesired outcomes



INFLUENCING PERFORMANCE

Do we perform the same way at work every day?

Why not?

What impacts our performance?

What you have just described are human factors



WHAT ARE HUMAN FACTORS?

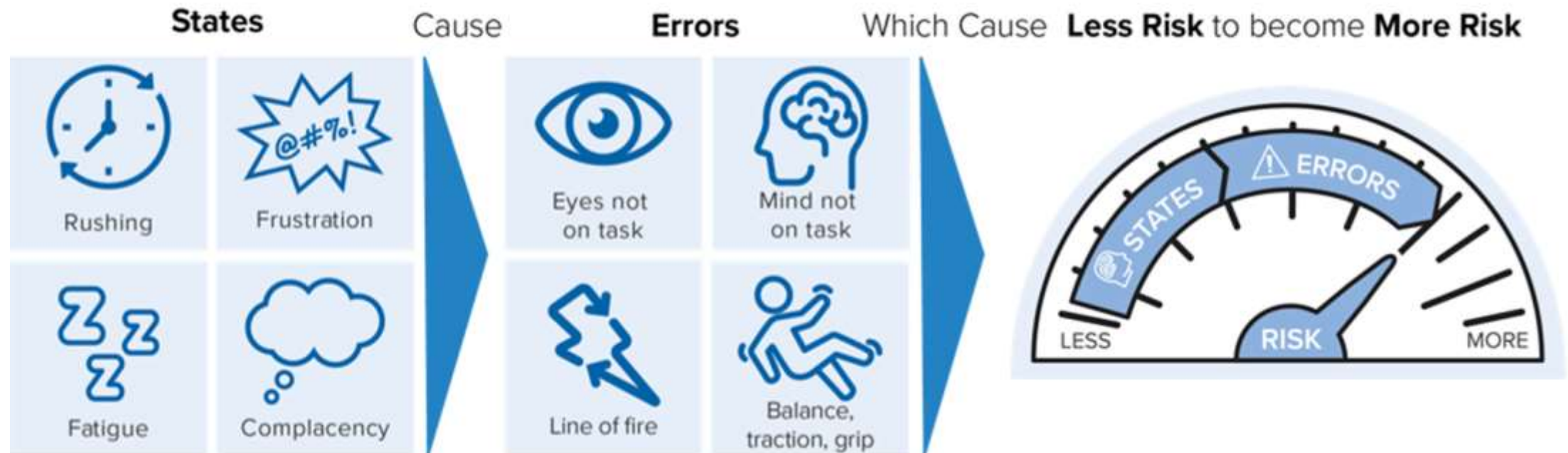
Physical and mental states that influence our behavior, attitudes and/or performance.

Those influences can be internal or external and can directly impact how we perform.

Influences need to be managed to create peak performance and reliable outcomes.



STATE TO ERROR PATTERN



Of An Undesired Outcome Occurring

HAS THIS EVER HAPPENED TO YOU?

Have you ever sent a voice text that didn't turn out quite the way you intended it to?

Love you

Today 8:02 AM

Love YouTube

Omg

Love you too

Voice to text 🤖

HAS THIS EVER HAPPENED TO YOU?

What happens next?

You go into scramble mode trying to correct it.

Why did the wrong message get sent?

We didn't take the time to check our work.



UNDESIRED QUALITY OUTCOME EXAMPLES

Think of all of the everyday things you do where quality matters and contributes to an end result.

An example is a DIY project.

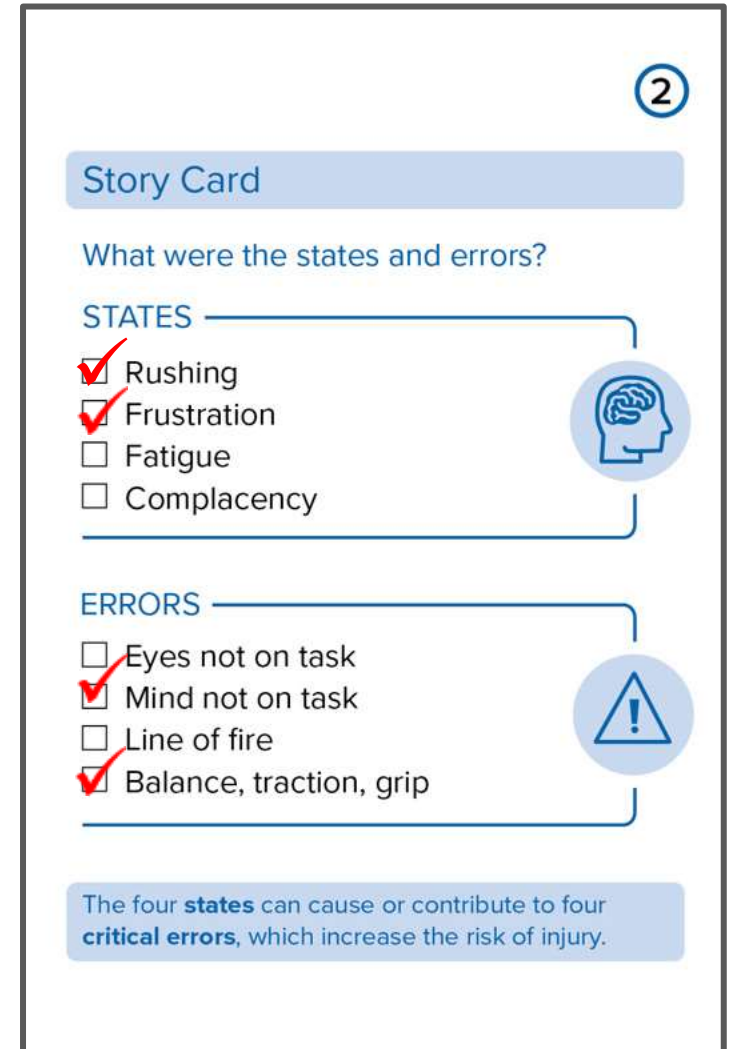


STATE TO ERROR PATTERN

CREATING UNDESIREED QUALITY OUTCOMES

Maybe we rush through instructions, which can lead to an end result that doesn't work properly.

Or maybe because we get frustrated along the way, we don't get the proper grip or use the right force and something breaks or is damaged.



STATE TO ERROR PATTERN

CREATING UNDESIREED QUALITY OUTCOMES

Perhaps fatigue leads to a trip or fall that breaks something valuable or causes us to miss an important step in a process.

Or perhaps complacency causes us not to prep our painting job properly leading to a messy looking floor or damage to uncovered objects.

2

Story Card

What were the states and errors?

STATES

- Rushing
- Frustration
- Fatigue
- Complacency



ERRORS

- Eyes not on task
- Mind not on task
- Line of fire
- Balance, traction, grip



The four **states** can cause or contribute to four **critical errors**, which increase the risk of injury.

UNWANTED QUALITY OUTCOMES

So the same state-to-error pattern that creates a safety issue also can create problems for us in quality and production.

Sometimes, quality issues and injuries occur together: we get injured and the thing we were working on doesn't turn out the way we intended.

But other times, we simply make mistakes that have quality implications.



TRIGGERING MULTIPLE UNDESIRED OUTCOMES

The things we do every day can have life changing or life ending impacts to ourselves or to people around us.

The things we do can also have significant impacts on the business we work for as well.



TRIGGERING MULTIPLE UNDESIRED OUTCOMES

Imagine you are this worker trying to do a repair at a height that isn't going well. You're tired, you're frustrated, and as you are putting a lot of force on the wrench and it comes out of your hand.



STATES LEAD TO ERRORS

1. What state(s) and error(s) are influencing your behavior?

②

Story Card

What were the states and errors?

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- Frustration
- Fatigue
- Complacency

ERRORS

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The four **states** can cause or contribute to four **critical errors**, which increase the risk of injury.

ERRORS INCREASE THE RISK OF AN UNDESIRED OUTCOME

2. If the wrench hits a worker below, what type of incident is that?



Select the best answer(s).

- Production
- Safety
- Maintenance
- Quality
- Customer experience

ERRORS INCREASE THE RISK OF AN UNDESIRED OUTCOME

3. Which type of incident is it if the falling wrench damages a piece of equipment?

Select the best answer(s).

- Production
- Safety
- Maintenance
- Quality
- Customer experience

ERRORS INCREASE THE RISK OF AN UNDESIRED OUTCOME

4. Which type of incident is it if the falling wrench damages a customer's product or part?

Select the best answer(s).

- Production
- Safety
- Maintenance
- Quality
- Customer experience

ERRORS INCREASE THE RISK OF AN UNDESIRED OUTCOME

5. When human factors contribute to an unintentional mistake, it can affect?

Select the best answer(s).

- Production
- Safety
- Maintenance
- Quality
- Customer experience

USING THE CERTS

SafeStart is not just about recognizing the state-to-error pattern that can cause multiple undesired outcomes.

It is also about providing techniques to avoid the negative effects of this pattern.



USING THE CERTS

These are called the Critical Error Reduction Techniques (CERTs).

Let's take a moment to review them and how we can apply them to quality improvement.



LOOK AT OTHERS

Observing the risk patterns in others helps us fight complacency and can even change our behavior.

For quality incidents, the same idea applies but with an expansion. You can communicate what you are seeing with others in order to improve the organizational loop.

Example: Noticing people placing finished parts or fragile components in areas where they can be damaged.

3

Story Card

What **critical error reduction techniques** might have prevented the incident?

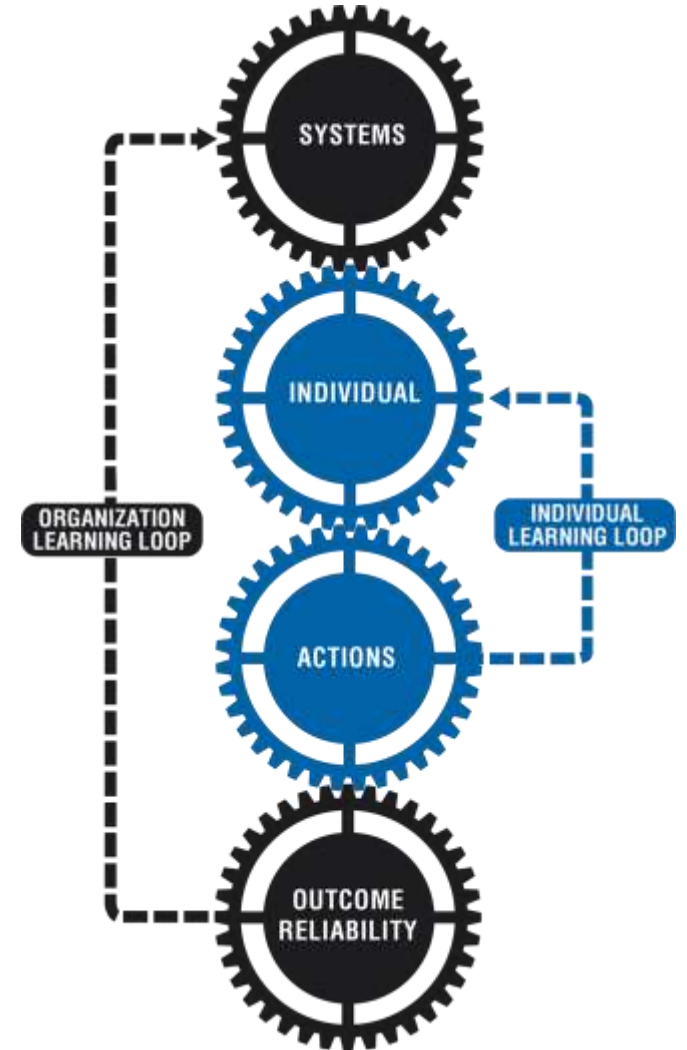
- Look at others for the patterns that increase the risk of injury
- Analyze close calls and small errors
- Practice building habits
- Self-trigger on your state (or the amount of hazardous energy)

What was the injury or close call?

How could it have been worse?

OBSERVATION AND COMMUNICATION

Team members can communicate what they are seeing with others in order to improve the organizational learning loop.



OBSERVATION AND COMMUNICATION

Open lines of communication and an environment where everyone is comfortable about speaking up when they notice something that could create a quality issue is critical to improving quality performance.

It's not about blame, but ensuring the customer is satisfied.

A satisfied customer is much more likely to place repeat orders.



ANALYZE CLOSE CALLS

Taking a moment to identify what went wrong with past incidents and asking specific questions helps us prevent similar (or worse) incidents next time.

For quality incidents, the close calls have to do with negative outcomes to quality.

3

Story Card

What **critical error reduction techniques** might have prevented the incident?

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What was the injury or close call?

How could it have been worse?

ANALYZE CLOSE CALLS

Example: Determining how a number on a blueprint was transposed that could have caused a part to be made to the wrong size, and putting strategies in place to avoid that error in the future.

③

Story Card

What **critical error reduction techniques** might have prevented the incident?

- Look at others for the patterns that increase the risk of injury
- Analyze close calls and small errors**
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ORGANIZATIONS LEARNING FROM INDIVIDUALS

When an injury occurs, it gets a lot of attention.

A lot of people get involved in determining what happened and how to prevent it from happening again.



SAFETY IMPROVEMENT IS CULTURE IMPROVEMENT

When people get involved and are actively committed to preventing injuries, it moves an organization's culture along in safety.



QUALITY IMPROVEMENT IS ALSO CULTURE IMPROVEMENT

We can do the same thing with a quality issue. When something unexpected happens, likely caused by the state-to-error pattern, we need to take action to correct the issue and prevent it from happening again.



OUR CULTURE DIRECTLY AFFECTS THE CUSTOMER EXPERIENCE

From these actions, we learn and ultimately create or refine a best practice to move our culture forward, and deliver a more reliable experience to the customer.



PRACTICE BUILDING HABITS

Choosing and developing automatic behaviors to help us avoid risk when we are complacent or otherwise overwhelmed by a state.

SafeStart has developed a set of quality-related habits that are effective in ensuring good quality outcomes.

Example: Reading instructions thoroughly and having clear understanding of the task. I “know” vs I “think” mentality.

3

Story Card

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THE PHYSICAL SYMPTOMS OF HUMAN FACTORS

What are some physical signs that the following human factors are affecting you?

What does it look like or feel like when you are rushing, frustrated, fatigued?

Do you always **recognize** when you are in those states?



SELF-TRIGGER

So if three of the most common states have physical signs associated with them, we need to actively practice assessing ourselves in the moment, to control their influences as much as possible so we don't make an error – **self-triggering**.

Our coworkers can help us with this recognition process as well – **look at others**.

③

Story Card

What **critical error reduction techniques** might have prevented the incident?

- Look at others** for the patterns that increase the risk of injury
- Analyze close calls and small errors**
- Practice building habits**
- Self-trigger on your state** (or the amount of hazardous energy)

What was the injury or close call?

How could it have been worse?

SELF-TRIGGER

Examples:

- Asking for help when multi-tasking to avoid rushing
- Asking for task clarification or pausing to avoid/minimize frustration
- Setting a task aside when overly fatigued

3

Story Card

What **critical error reduction techniques** might have prevented the incident?

- Look at others for the patterns that increase the risk of injury
- Analyze close calls and small errors
- Practice building habits
- Self-trigger on your state (or the amount of hazardous energy)

What was the injury or close call?

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APPLYING THE CONCEPTS IN THE REAL WORLD

Key Concepts

- Performance is influenced by human factors
- States lead to Errors which increases the risk of undesired outcomes
- Multiple undesired outcomes can be triggered by the same event (aka the ripple effect)
- Using the CERTs to reduce the risk of undesired outcomes



PRINCIPLES FOR A STRONG FOUNDATION



Safe



Right



Efficient

- Do it safely or pass on the job
- It's not worth someone getting hurt



PRINCIPLES FOR A STRONG FOUNDATION



Right

- Solid plan to prevent errors
- No ambiguity
- Learn from errors
- Do it better next time



PRINCIPLES FOR A STRONG FOUNDATION



Efficient

- Constantly look to improve



PRINCIPLES FOR A STRONG FOUNDATION



Safe



Right



Efficient



SOLID PLAN TO PREVENT ERRORS STARTS WITH GOOD HABITS

Ultimately we want our team members to be able to manage the influences of the States by applying the CERTS in real time so they can produce the desired outcome consistently.

Learning to be consistent starts with training.



SOLID PLAN TO PREVENT ERRORS STARTS WITH GOOD HABITS

If you were to ask three experienced people in a department—who do the same job—who do the most important habits a new person needs to learn to do their job are, would you get the same answer?



THE IMPORTANCE OF BUILDING GOOD HABITS

Habits are how we function after complacency sets in.

For example, how were we taught to place our hands on the steering wheel in driver's ed?

How many of us still drive like that consistently today?

Why not?



THE IMPORTANCE OF BUILDING GOOD HABITS

How many of us have been told to proofread, inspect, or double-check our work before passing it in or along?

What's the main reason we sometimes don't?

Is that a key human factor that influences our performance?



TECHNIQUES FOR CREATING A SOLID PLAN & ELIMINATING AMBIGUITY

Why does an experienced pilot use a pre-flight checklist every time?



Or a surgeon inventory their instruments and sponges before surgery and before they close up a patient every time?



THE QUESTIONS TO ASK

How do we **intentionally** teach the habits to our team that needs to be successful in their tasks, and how do we **consistently reinforce** using those habits so that they become “the way we do things around here”?



THE QUESTIONS TO ASK

What a new person sees is what they will mimic. What do they see everyday happening in your operation?

How effective is “do as say, not as I do”?



ELIMINATING AMBIGUITY

One of the most effective ways a leader or a peer can mentor an employee and eliminate ambiguity from a task is to ask the employee performing the task to “*walk me through it.*”

This technique ensures that key aspects of the task are understood and that complacency has not set in before the task begins.



ELIMINATING AMBIGUITY

The conversation should specifically address both safety and quality concerns, that if not accounted for, could produce an undesired outcome.

It also provides the leader or peer to inquire/assess if states like rushing, frustration, or fatigue are impacting the employee.



LEARNING AS INDIVIDUALS AND AS AN ORGANIZATION

When something doesn't go as expected, we need to learn from the event as individuals and as organizations to improve future outcomes.



LEARNING FROM ERRORS – ANALYZING CLOSE CALLS

Do our people care as much about quality as they do about their own safety?

So how much more effort do we need to put into making our team understand how important quality outcomes truly are?



LEARNING FROM ERRORS – ANALYZING CLOSE CALLS

Do we place as much effort into resolving quality incidents and close calls as we do resolving safety incidents and close calls?

Do we account for the influence of states and errors in those investigations?



LEARNING OPPORTUNITIES

When we notice an error that could lead to a quality issue, do we take the time to figure out what state(s) contributed to the error or do we simply correct it and move on?



LEARNING OPPORTUNITIES

Previous Example: You notice a number on a blueprint was transposed.

Implication: Could lead to a part being made to the wrong size.

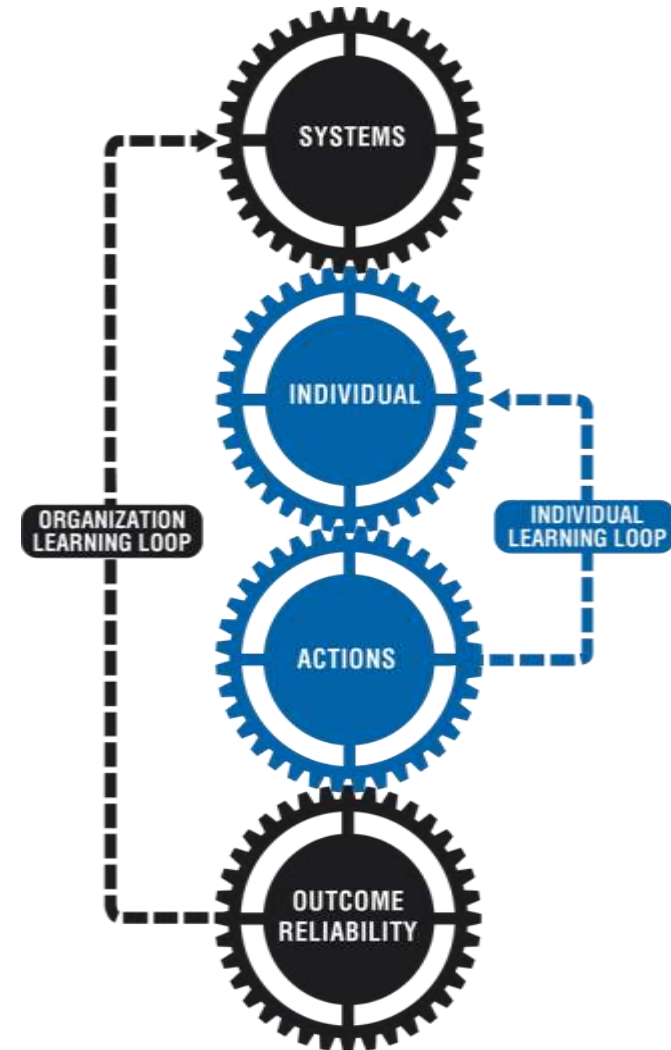
Action: ?



LEARNING FROM ERRORS – ANALYZE CLOSE CALLS

Teaching team members to communicate unexpected outcomes with others in order to improve the organizational learning loop.

Strong communication helps the team develop best practices.

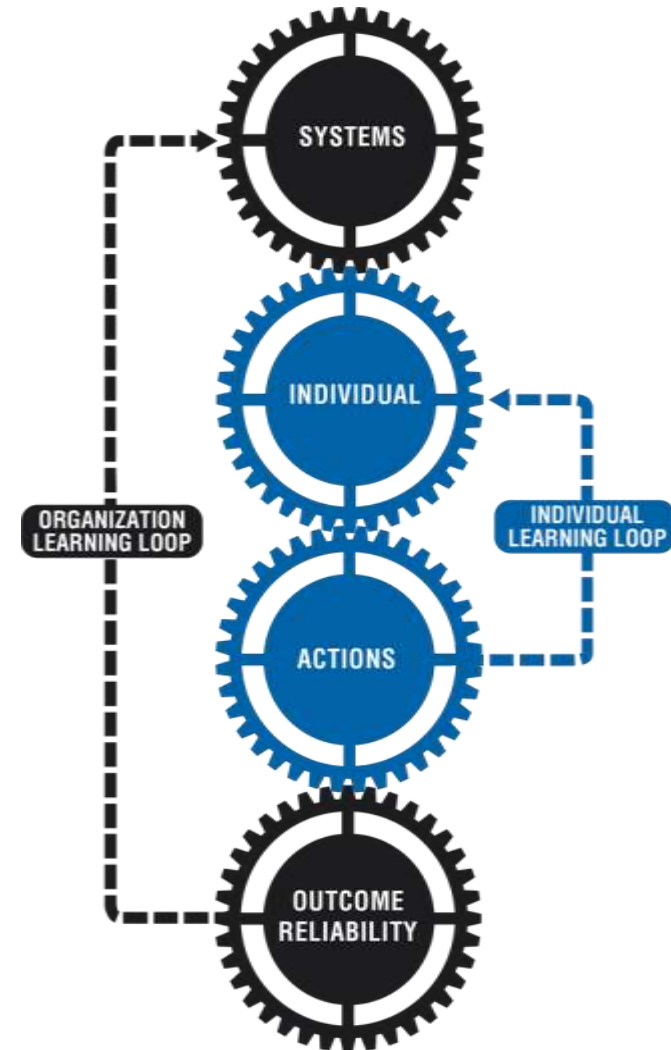


DOING IT BETTER NEXT TIME

Where do the best practices come from?

Experiences and lessons learned from the individuals and passed on to the organization

Outcome: An exceptional customer experience



DOING IT BETTER NEXT TIME

Systems

How work gets done in this organization

Individual factors

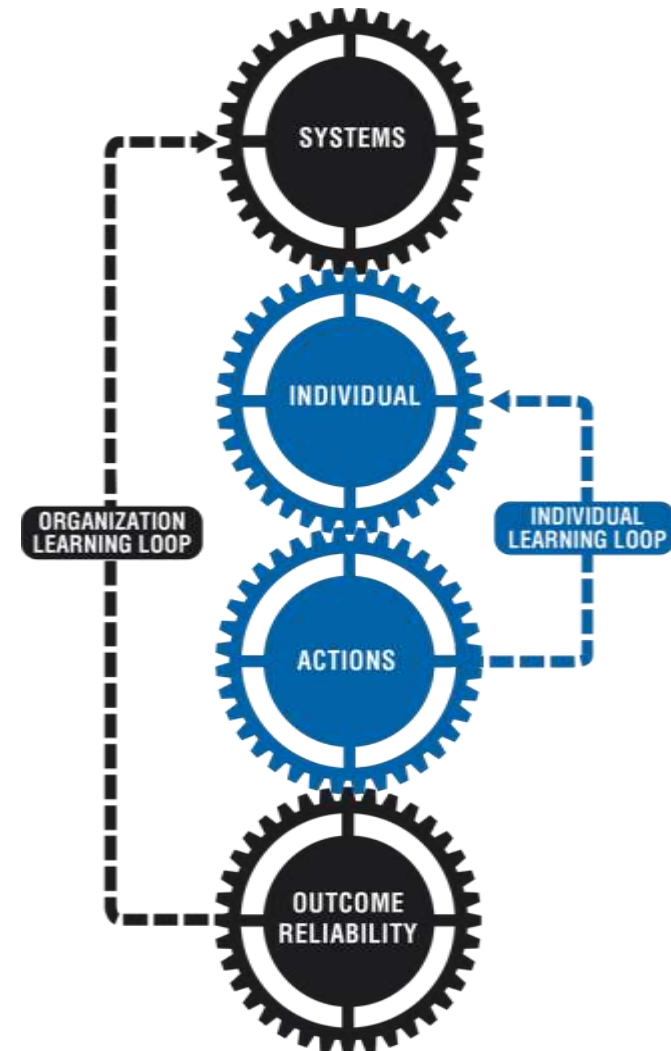
How individuals feel and think

Actions

What people do

Outcome reliability

Safety, quality, culture, performance



ADDITIONAL WAYS OF APPLYING THESE CONCEPTS

- Build awareness and stress importance by identifying the safety high risk of the day **and** the quality high risk of the day in a department.
- Set a task aside when overly fatigued or unable to focus.
- Tell quality-related SafeStart stories on a regular basis.
- Find ways to put reminders of key quality habits in the path of employees' work.
- Use teams to start quality projects on re-occurring problems that they experience in their areas that are caused by the state-to-error pattern.

PROJECT EXAMPLE

PROJECT DEFINITION

ISSUE: Forging(s) not stamped correctly.

QUANTIFY: 59% of the Forge's NC's/NCR's for the past 6 months.

IMPACT: Potential loss of traceability, rework and/or late delivery.

IMPROVEMENT PLAN:

SELF TRIGGER: I will post this document at my work station so it can help remind me to work on this best practice.

WORK ON HABITS: Verify what I place into the stamp holder vs the pink and then place a checkmark on the pink next to the hard makings. Once the forging is stamped, I will verify the stamps on the forging vs the pink and then put a slash through the checkmark on the pink.

LOOK AT OTHERS: I will ask my lead man or a co-worker to audit a part I stamped once per day and to spot check that I'm placing the checkmarks on the pink.

ANALYZE CLOSE CALLS: I will do an ACC (Analyze Close Calls) card if I mismark a forging.

SUCCESS MEASUREMENT:

TRACKING: I will track the shop orders I mark each day on my furnace load sheet.

X-Correct X-Not

GOAL: I will have zero mismarked parts for the remainder of 2015.



Outcome:

TOTAL ORDERS
260

**CAUGHT & CORRECTED
BY CREW**

CORRECT: 98.8%

INCORRECT: 1.2%

**CAUGHT & CORRECTED
OUT OF FORGE**

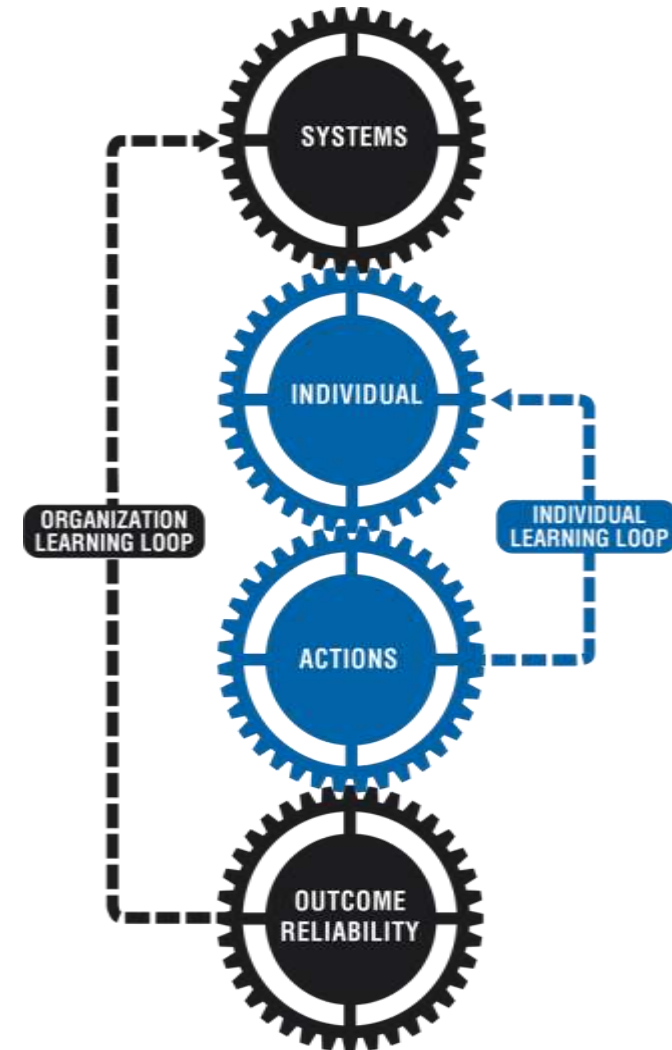
CORRECT: 100%

INCORRECT: 0%

SESSION REVIEW

We looked at how the state-to-error pattern creates more negative outcomes than just injuries.

We have seen that it in fact can create a variety of negative outcomes that affect quality of work, quality of result and quality of experience.



SESSION REVIEW

We have seen how the States interact with the systems and processes of an organization, influencing not only individual outcomes but organizational outcomes.

We also saw how the CERTs are an effective tool in reducing the risk of creating an unwanted quality outcome.



FURTHER HELP IS AVAILABLE

SafeStart has developed a quality-centered flex unit that expands on the core training principles to address the importance of quality performance in the workplace and managing the influences of Human Factors.





THANK YOU FOR ATTENDING!

