

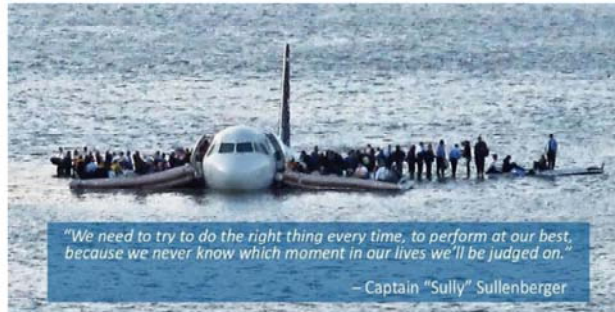


## **Human Performance and Internal Controls: Protecting Our Two Most Valuable Assets**



## A Simple Explanation

Internal controls are those activities that we perform to ensure that what we want to happen **will** happen, and what we don't want to happen, **won't** happen.



## Alcoa and Paul O'Neill

Late 80's Alcoa performing poorly

New CEO : Paul O'Neill

First speech to stakeholders, boardmembers, financial analysts

They're walling : how's he going to turn things around to increase stock prices

He says: focus on worker safety - he feels you can tell how Alcoa is doing based on their worker safety numbers

UNDERSTAND: Alcoa financially doing poorly but they have the best safety record in the industry. They are the benchmark for workers safety.

Dumbfounded - Convinced they've hired a nutcase how long do you have to keep a CEO??

O'Neill goes off and constantly talks safety - wants zero accidents

6 mo phone call in the middle of the night: Plant in AZ. AND THEY HAD A PROBLEM: Machine Jammed.

- 1) New EE things he can fix it
- 2) Jumps over safety rails
- 3) Walks across the machine
- 4) Tugs/removes the aluminum jamming the machine
- 5) Machine jumps to life and immediately kills the worker

End of the next day O'Neill at plant with all Plant executives

Proceeds to explain how they all killed that young man:

- 1) Mr O'Neill states that he killed that young man due to failure of leadership
- 2) 2 Plant mgs. Were in the plant that night and saw the young man jump over the safety rail, they killed him due to lack of management (they should have stopped him)
- 3) Head of HR and Training killed that young man because they obviously didn't train him well enough, he wasn't trained due to being so new, to find mgmt. or someone more knowledgeable on the equipment
- 4) Director of Engineering killed the young man because the machine was not designed to sense that a human being was in the machine and should automatically shut down
- 5) Continued around the room letting everyone know their part in the death of that young man

Immediately start reviewing/walking down processes and identifying gaps. Quickly made changes:

- 1) Painted the safety rails bright yellow
- 2) Created new processes, procedures and policies with the help of the people more intimately involved in the process
- 3) BIGGEST THING: Mr O'Neill gave every employee his personnel phone number, instructing them to contact him personally if they identified a safety issue, especially if their manager wasn't listening to them. Which obviously meant go to them first.....

Years go by, things are improving but still having accidents, but NOTHING like Arizona about his 5.6 year in office he's talking at a stakeholders meeting when a Benedictine nun stands up and asks him what is he going to do about the accident at your plant down in Mexico. He knows nothing. The Nun continues:

- 1) Carbon monoxide leak
- 2) 150 employees were poisoned, thankfully no one died

Immediately dispatches a team to Mexico to investigate. The Sr Plant Executive addressed the problem by installing a better ventilation system, preventing it from happening again. Kept it to himself because of the zero accident policy. FIRED IMMEDIATELY.

O'Neill didn't fix things over night. He was CEO for about 13 years, turned the company around from 3 billion/annually to 27 billion/annually. UNHEARD OF!! When he took the position, he knew that to improve performance he had to look at the processes and procedures, and include the people doing the work. Rally!!



Natural Integration Between HPI and IC	
<b>Human Performance:</b> (DOE-HDBK-1028)  <b>Define the Scope of Work</b>  <b>Management expectations</b> are set.  Tasks are identified and prioritized, and resources are properly allocated.  People achieve high levels of performance <b>based on reinforcement from leaders</b> and peers.	<b>Internal Controls:</b>  <b>Control Environment</b>  <b>Foundation</b> for all other standards of internal control.  Should <b>influence all the decisions</b> and activities of an organization.  Positive "tone at the top".

Held everyone accountable for that employee's death  
Gave out his personnel phone number – We're all in this together! At the same time communicating to management that they were expected to listen and act or be ready to explain why they didn't  
Took immediate action when the Mexico accident happened

Natural Integration Between HPI and IC	
<p><b>Human Performance:</b></p> <p><b>Analyze and Categorize the Hazards</b></p> <p><b>Robust hazards analysis</b> should consider error precursors in the work place such as:</p> <ul style="list-style-type: none"> <li><i>Adverse environmental conditions</i></li> <li><i>Unclear roles/responsibilities</i></li> <li><i>Time pressures</i></li> <li><i>High workload</i></li> <li><i>Confusing displays or controls</i></li> </ul>	<p><b>Internal Controls:</b></p> <p><b>Risk Assessment</b></p> <p>Risk assessment is the <b>process of identifying, evaluating, and deciding how to manage these events...</b></p> <ul style="list-style-type: none"> <li><i>What is the likelihood of the event occurring?</i></li> <li><i>What would be the impact if it were to occur?</i></li> <li><i>What can we do to prevent or reduce the risk?</i></li> </ul>

After the accident, O'Neill and the executives reviewed every detail of the accident. They watched video footage again and again. They recreated the stages of the accident through diagrams, compiling a list of dozens of mistakes made by multiple parties.

Natural Integration Between HPI and IC	
<b>Human Performance:</b>  <b>Perform Work</b>  People are fallible, and even <b>the best people make mistakes.</b>  People err and make mistakes, therefore it is all the <b>more important that controls are implemented</b> and properly maintained.	<b>Internal Controls:</b>  <b>Control Activities</b>  <b>Tools, policies, procedures, processes</b> -designed and implemented to help ensure that management directives are carried out.  <b>Occur throughout the organization,</b> at all levels, and in all functions.

Obvious serious lack of controls prior to Mr. O'Neill's arrival.

Numerous controls implemented:  
 painted the safety railings bright yellow,  
 reviewed and updated all policies and procedures,  
 ensured machinery was equipped with sensors to identify human presence  
 Established an incident review / lessons learned

Natural Integration Between HPI and IC	
<p><b>Human Performance:</b></p> <p><b>Feedback and Improvement</b></p> <p>Events can be avoided through an understanding of the reasons mistakes occur and <b>application of the lessons learned from past events (or errors).</b></p> <p>Line management and independent oversight are important controls that support "oversight". <b>Identification of organizational weaknesses that weaken controls.</b></p>	<p><b>Internal Controls:</b></p> <p><b>Information and Communication</b></p> <p><b>Pertinent information must be captured, identified, and communicated on a timely basis.</b></p> <p><b>Effective information and communication systems</b> enable the organization's people to exchange the information needed to conduct, manage, and control its operations.</p>

Mexico's Sr Executive chose to not communicate (report) the event. This information is imperative, he had researched and mitigated the situation, however he didn't consider that it could be an issue at other plants. Once a risk is emerges that identifies that a control is broken, all internal and external customers that could be affected (or have the same risk) must be notified.

Natural Integration Between HPI and IC	
<p><b>Human Performance:</b></p> <p><b>Develop and Implement Hazard Controls</b></p> <p><b>Environmental and individual factors:</b>  Environmental factors include procedure quality, component labeling, human-machine interface.</p> <p>Individual factors include knowledge, skills, experience, family problems, color blindness, etc.</p> <p>8</p>	<p><b>Internal Controls:</b></p> <p><b>Monitoring</b></p> <p>We must <b>assess the effectiveness</b> of our internal controls... <i>Are they operating as intended and producing the expected results?</i></p> <p>Monitoring <b>occurs in the course of everyday operations</b>, it includes regular management &amp; supervisory activities and other actions personnel take in performing their duties.</p> <p>RF</p>

ISM: Integrated Safety Management



## Commonalities Between Both Programs

- **Make sense within each unique operating environment.  
Support the Mission/Goals - Strategic Controls.**
- **Benefit rather than encumber management.  
Efficient and effective use of resources.**
- **Are not stand-alone practices; they are woven into day-to-day responsibilities.**
- **Are cost-effective.**



## Important Concepts to Remember

- Both HP and IC are processes; they are a means to an end, not an end itself.
- Both programs are effected by people; it's not merely policy manuals and forms but people at every level of an organization.
- Neither program can be expected to provide absolute assurance, only **reasonable assurance**.



## Benefits of Strong HP and IC Programs

- **Reducing and preventing errors in a cost-effective manner.**
- **Ensuring priority issues are identified and addressed.**
- **Protecting employees and resources.**
- **Providing appropriate checks and balances.**



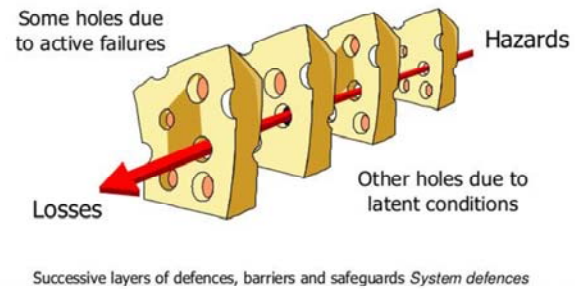
## **Weaknesses of Poor Programs**

- **Erroneous Management Decisions**
- **Excessive Costs**
- **Loss, Misuse, Destruction of Assets**
- **Business Interruption**
- **Possibility for the loss of human life**



## HPI and IC Go Hand in Hand

### Reason's "Swiss cheese" model of accident causation





# Luck Is Not A Strategy



# In the last year have you...

- Texted while walking
- Stood on a chair
- Used a stairway without holding the rail
- While operating a vehicle:
  - Sped
  - Read an email or texted
  - Drove while tired
  - No seatbelt
- Did yardwork without PPE
- Opened a SPAM e-mail
- Dined without knowing health rating





<https://www.youtube.com/watch?v=XkpDz8YyVD8&t=12s>



# How did this happen?

Was this the **Pre-job Brief**?

Why did the QB take such a big risk?

Does the **behavior** match the **result**?







KnowledgeVine







KnowledgeVine



# Lessons Learned?

Would you call this a **near miss**?

What is the likelihood of **recurrence** of this behavior?

Does the team's record tell us how **lucky** they are vs how **good**?







<https://www.youtube.com/watch?v=vR7s2m5Z5GA>













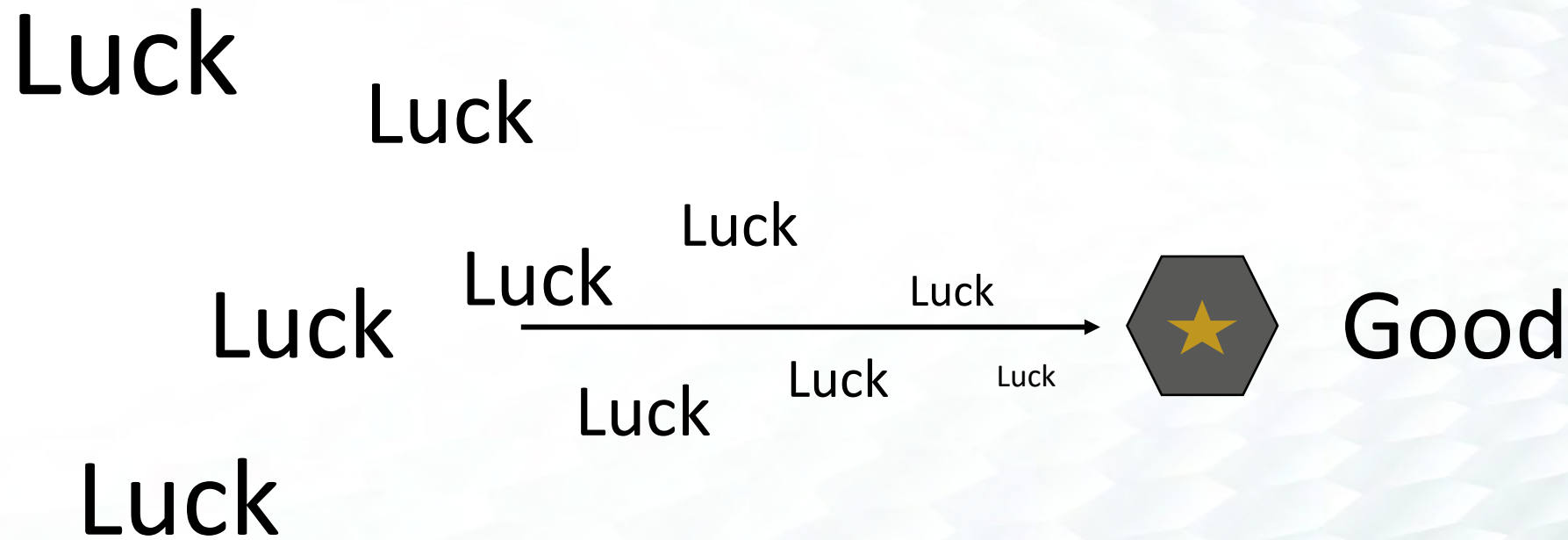
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**It's difficult to know if you're luck or good... and your safety numbers aren't a reliable indicator?**



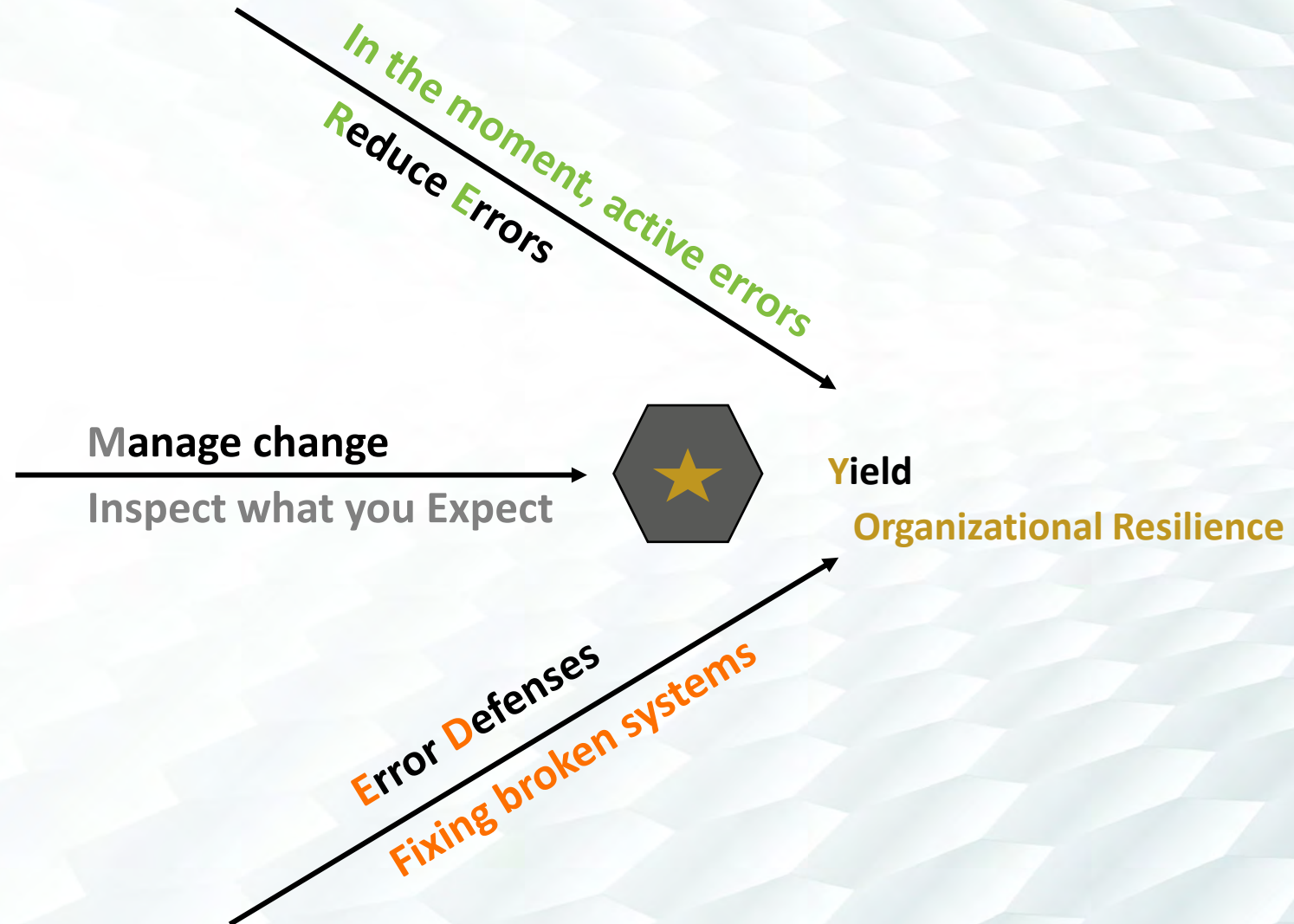


If you're not structuring good results, you need more luck.




# The REMEDY

Human Performance: less luck, more designed results



# Building the REMEDY strategy

Reduce Errors



When we think of “Reducing Errors”  
we think of worker Behaviors.





# The Monday Morning Quarterback

## Worker Behavior

## When we win...

## When we lose...

1. ...sees what's not working and adjusts.
2. ...adapts to unfamiliar situations.
3. ...figures out ways to be more efficient.
4. ...has the experience to overcome insufficient resources.
5. ...uses their knowledge to make sense of confusing instructions.

1. Adaptable

2. Makes it Work

3. High Producer

4. Resourceful

5. Experienced

1. Took Risks

2. Made it up

3. Used Shortcuts

4. Worked Around

5. Made Assumptions



# Building the REMEDY strategy

How do good **Error Defenses**  
help worker **Behaviors**?





# How Do Error Defenses Help?

## Worker Behavior

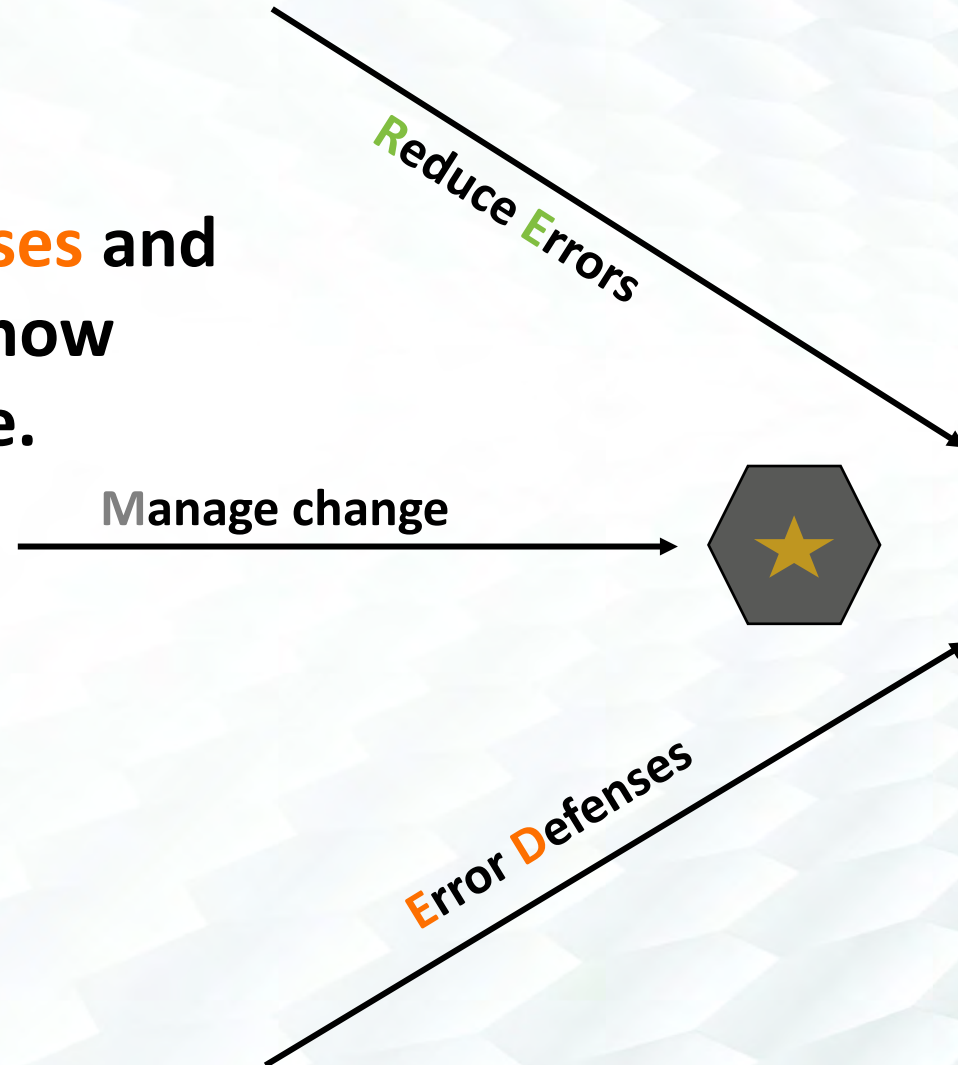
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2. ...adapts to unfamiliar situations.
3. ...figures out ways to be more efficient.
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## The system doesn't...

1. Give people faulty work processes
2. Ask workers to figure it out
3. Place production pressure on workers
4. Ask worker to "make do" with less
5. Provide incomplete guidance

# Building the REMEDY strategy

Look at **Error Defenses** and **Behaviors** to know how work is getting done.











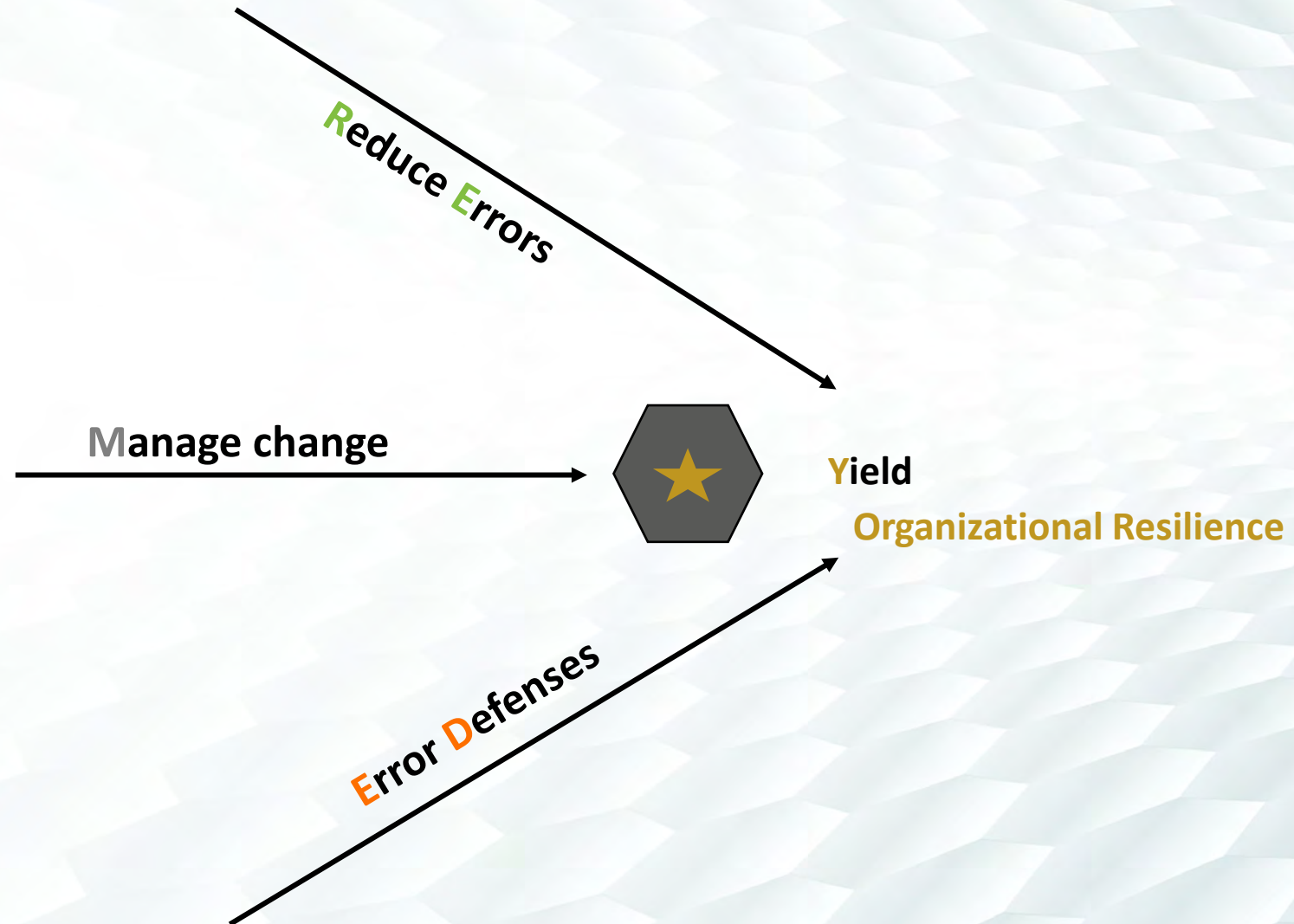
**Still  
measuring  
success by  
results?**







# Luck is not a strategy, Human Performance is





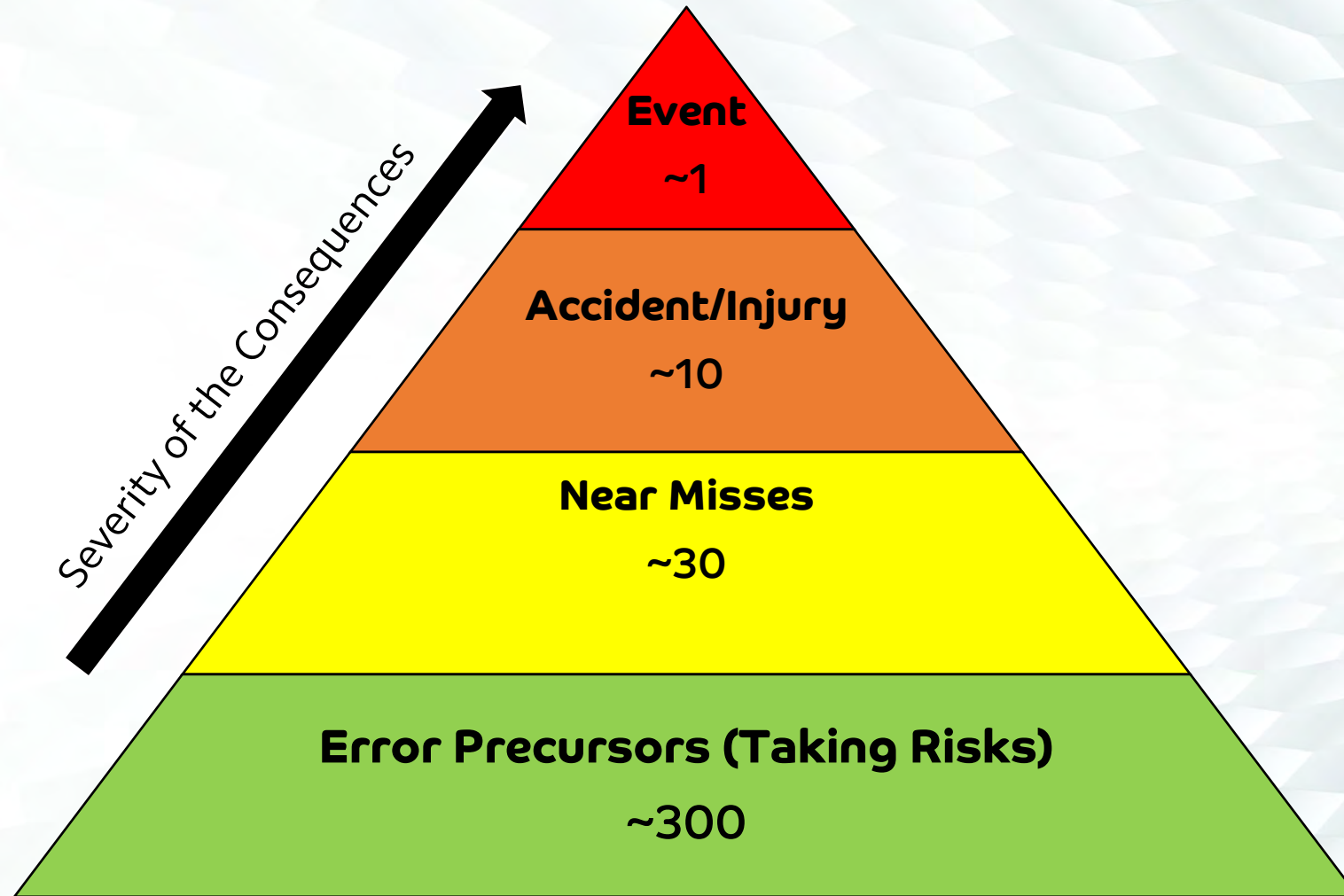
# Can we rely on 0.1% luck?

**In other words, is 99.9% good enough?**

- 12 newborns will be given to the wrong parents daily.
- 107 incorrect medical procedures will be performed today.
- Every hour 18,322 pieces of mail will be mishandled.
- 810 commercial airline flights would have unsafe landings every month.
- 315 entries in Webster's Dictionary will be misspelled.
- We would have no electricity for 10 minutes each week.
- Every hour 22,000 transactions will be deducted from the wrong bank accounts.
- 20,000 incorrect drug prescriptions will be written this year.
- Every day in the U.S., 2.8 million calls would go to the wrong number.
- 103,260 income tax returns will be processed incorrectly each year.
- For 43 minutes each month the drinking water from your faucet would be unsafe.
- 291 pacemaker operations will be performed incorrectly.



# Is your luck running out?



This is behaviors

# How do we know if we are lucky or good.

- Two easy ways to find out:

- Near miss reporting



- Observations





# How do we get to good?

## Don't Take Risks

- Don't audible.
  - Stick to the plan.
  - If the plan doesn't look like it's going to work, stop and get more guidance.
- Don't throw up a Hail Mary and hope for luck.
  - Luck usually helps us out...until it doesn't.
- You have unlimited time-outs and clock doesn't run out.
  - Mitigate the trap of time-pressure.



# In the last year have you...

- Texted while walking (5,977)
- Stood on a chair (650)
- Used a stairway without holding the rail (12,000)
- While operating a vehicle: (40,000)
  - Sped
  - Read an email or texted
  - Drove while tired
  - No seatbelt
- Did yardwork without PPE (75- lawnmowers)
- Opened a SPAM email (\$20 billion)
- Dined without knowing health rating (3000)

# Looking for more?

- Join the Human Performance Community of Practice
  - 1-hour webinars, meet every other Thursdays a 4 ET
  - Hosted by Dr. James Merlo and Dr. Mike Legatt



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- <https://mailchi.mp/e4274b7f9e84/hpcop>

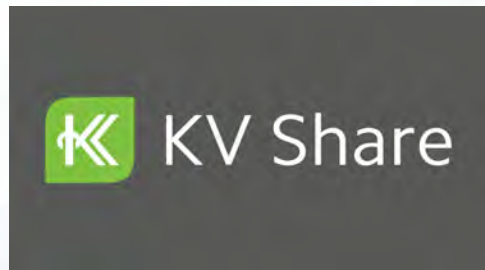




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