Seven Practical Steps to Improve Safety & Human Reliability

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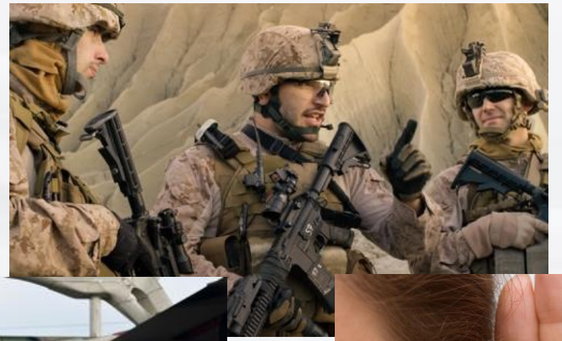
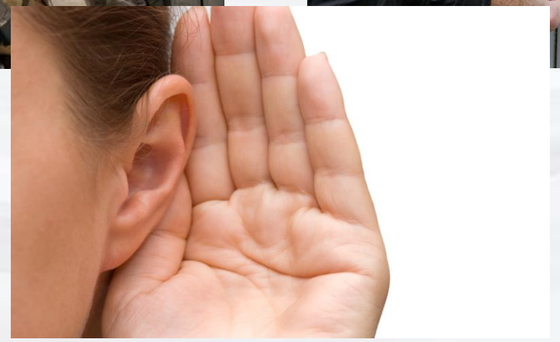
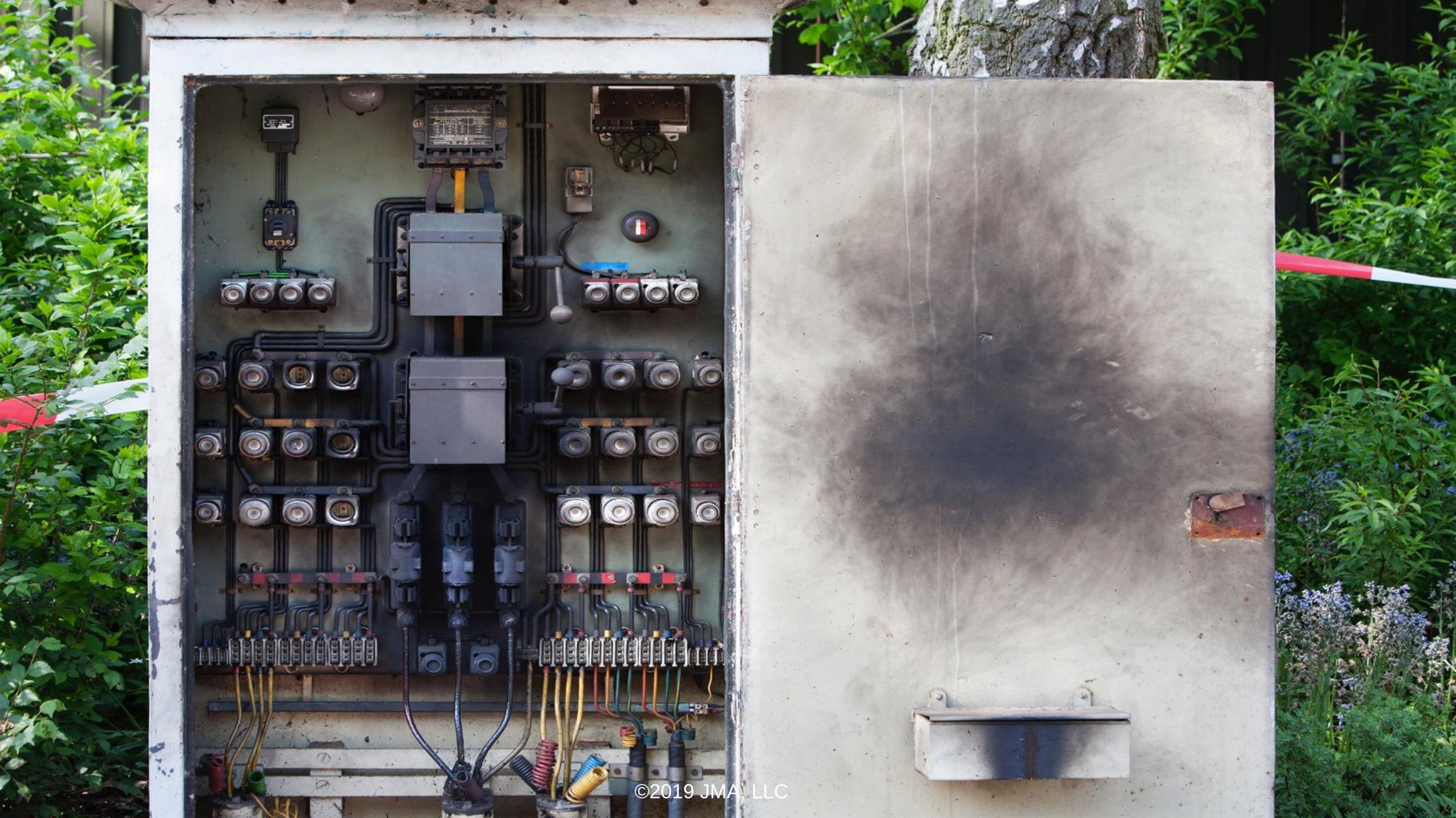


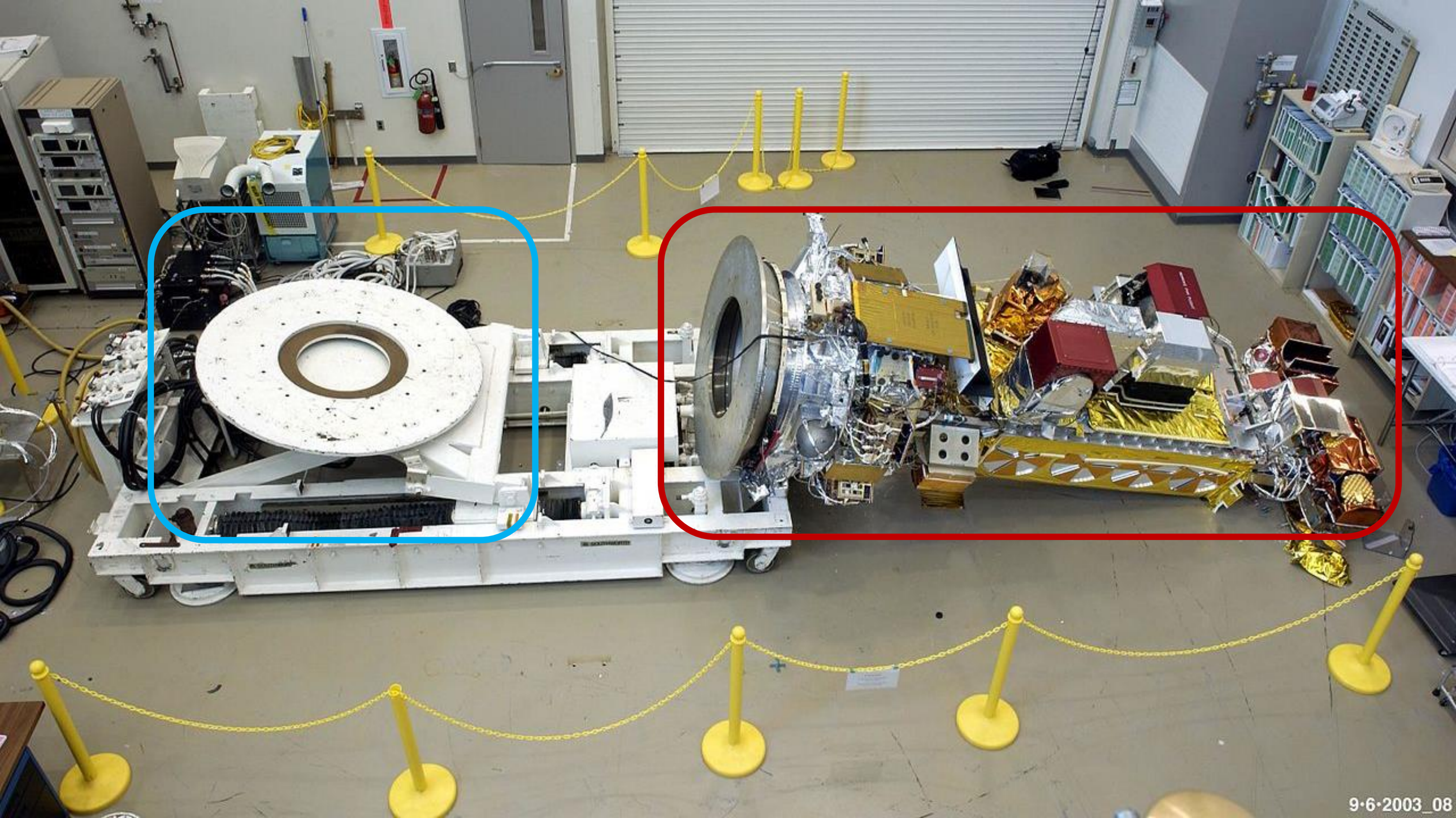




To err is human.

~ Alexander Pope, 1711

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“Human Error”

Not just about Safety

The cost of errors

Poll – How much money do companes spend on errors each year?

https://docs.google.com/forms/d/1LpwWV9XppdFu4JSRk_czgmo_spegxaKPQ1w7QwyJKlU/edit

Article – The War on Error: Human Error as a Strategic Risk Management Concern (Risk Mgmt. Magazine)

https://www.rmmagazine.com/articles/article/2013/05/06/-The-War-on-Error-Human-Error-as-a-Strategic-Risk-Management-Concern-

The Big Question

How can we effectively balance error-prone human nature with increasingly complex, expensive and hazardous workplaces?

Many companies try to eliminate errors...

Jake Mazulewicz, Ph.D.
www.reliableorg.com







What works?

A “Consolidation of Subtleties”

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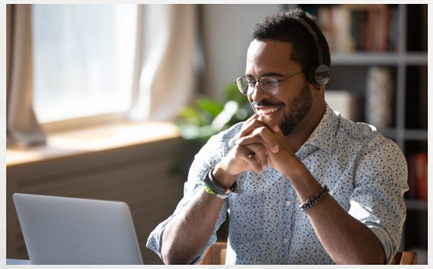
1) Take a Learning-Based Approach



2) Create Psychological Safety

3) Lead After Action Reviews

4) Apply Defenses

5) Improve Processes

6) Build Resilience

7) Tell Stories That Change Minds

One-Page Summary of The Seven Steps

https://www.dropbox.com/s/nzqa2uhd3vau0uw/Seven%20Steps%20handout%20--%20v14%20April%202022.pdf?dl=0

Seven Steps to Improve Human Reliability & Safety in High-Hazard Industries

Humans make errors.

In complex, modern workplaces, errors are signals, not failures. Trying to eliminate all errors with strict procedures and tough accountability creates a fear-soaked culture that silences truth-tellers, and causes *more* errors.

There is no one secret or single solution. Instead, the safest and most reliable high-hazard industries use a "Consolidation of Subtleties" – a combination of key steps like these.

Seven Steps

1) Take a Learning-Based Approach
Many leaders take a control-based approach to errors. This mechanistic view may have worked in simple, repetitive jobs 100 years ago. But most modern jobs are so complex and adaptive that a Learning-Based approach is far more effective.

2) Create Psychological Safety
It's easy to destroy and challenging to create. But research from Harvard and real-world results from companies like Google show that Psychological Safety is the key to successful, safe, reliable teams. In this module, you'll learn practical ways to create it.

3) Lead After Action Reviews (AARs)
For over 30 years, they've been used in every branch of the US military and by an increasing number of teams in high-hazard industries worldwide. In this module, you'll learn how to lead these non-punitive, semi-structured, post-job debriefs for your team.

4) Apply Defenses (Basic)
Peer Checks. Three-Step Communication. Checklists. The Scan & Focus model of Situational Awareness. You can learn these and other basic defenses in a few hours, and get real-world results immediately. But beware the hidden drawback.

5) Improve Processes (Intermediate)
Instead of trying to "fix" your workers, improve your work processes & systems. This intermediate-level strategy can prevent *thousands* of errors without blame or shame. In this module, you'll see examples of "defensive designs" from utilities, UPS & more.

6) Build Resilience (Advanced)
The world's most High Reliability Organizations (HROs) don't try to eliminate all errors, or "Proceduralize Everything." Instead, they build resilience by detecting "weak signals," adapting quickly, and using fail-safes & resources-in-reserve to recover fast.

7) Tell Stories That Change Minds
For thousands of years, human brains have evolved to think in stories. In this module, you'll learn the classic 3-part story structure you can use to communicate complex concepts, share Close Calls, win over skeptics, and make your messages "stick."

To learn more, visit reliableorg.com

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Practical Human Performance for Leaders

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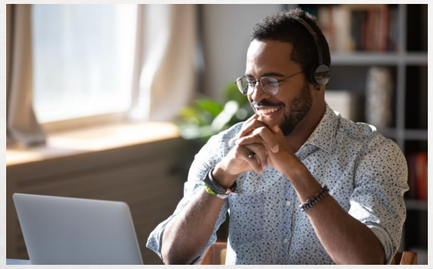

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Two Approaches to Errors

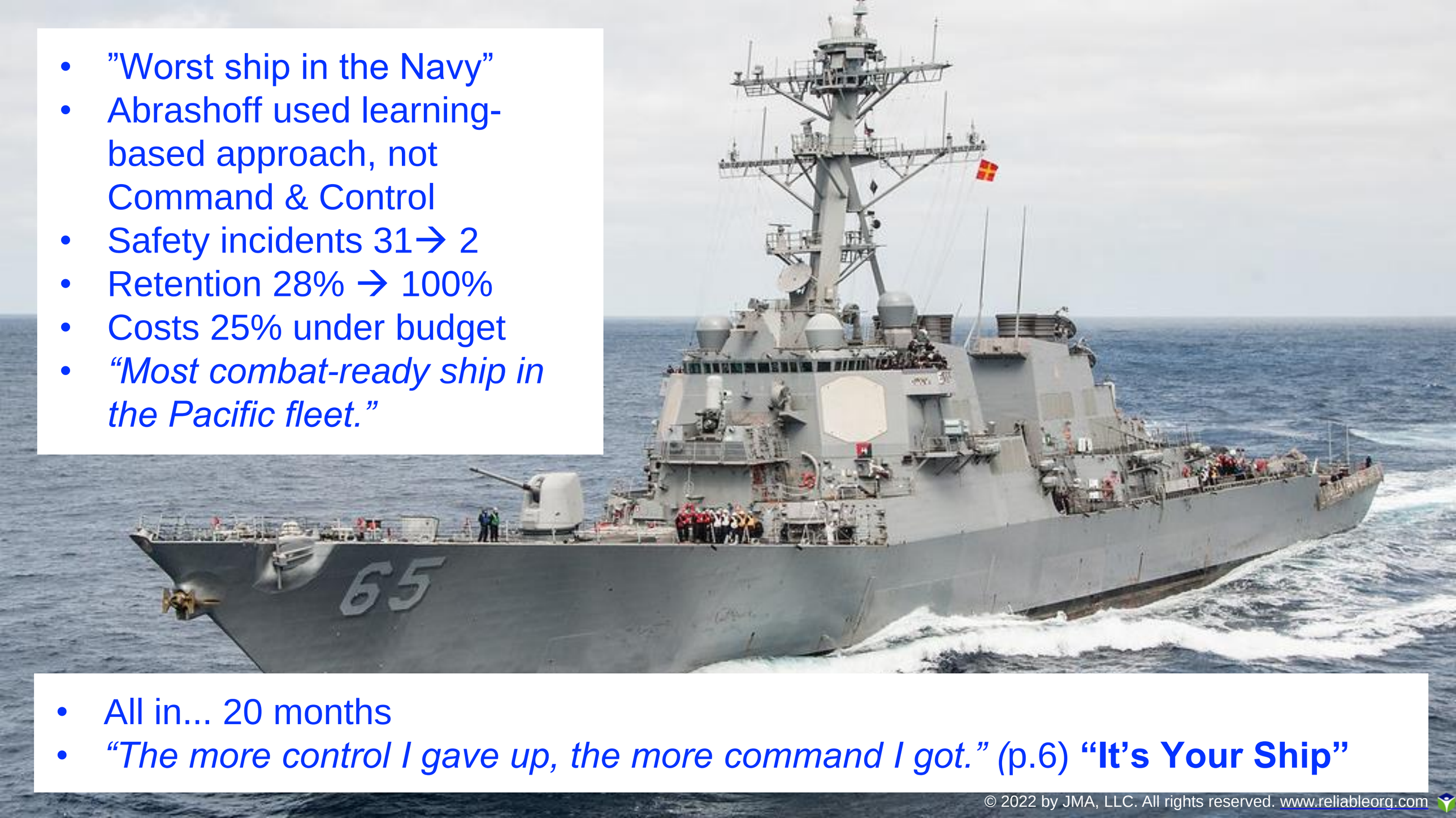
Control-Based Approach

- Expect perfection
- Root out failures
- Hold individuals accountable
- Increase compliance
- Master technical skills

Learning-Based Approach

- Expect humans to be...
- Expand successes first
- Focus on systems & teams, not individuals
- Increase...
- Balance technical skills and...

Results of the Learning-Based Approach to Errors?



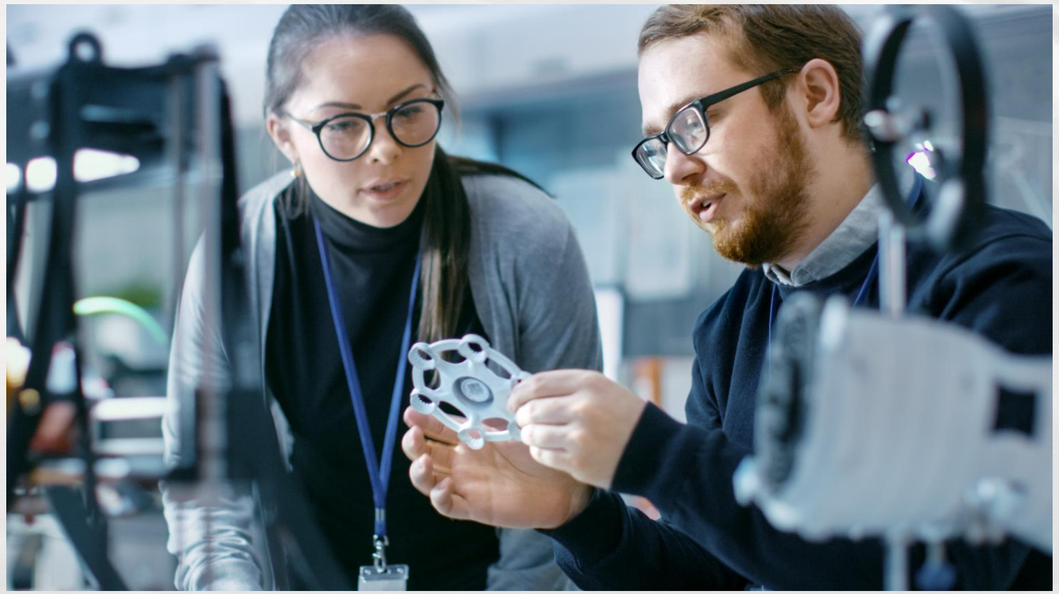
- ”Worst ship in the Navy”
- Abrashoff used learning-based approach, not Command & Control
- Safety incidents 31→ 2
- Retention 28% → 100%
- Costs 25% under budget
- *“Most combat-ready ship in the Pacific fleet.”*

- All in... 20 months
- *“The more control I gave up, the more command I got.”* (p.6) **“It’s Your Ship”**

One Practical Step for 1) Take a Learning-Based Approach

After the next incident or error, instead of asking, “What went wrong?” ask...

“How does this job get done right 99% of the time?”



Poll -- Your Initial Thoughts on the Learning-Based View of Errors?

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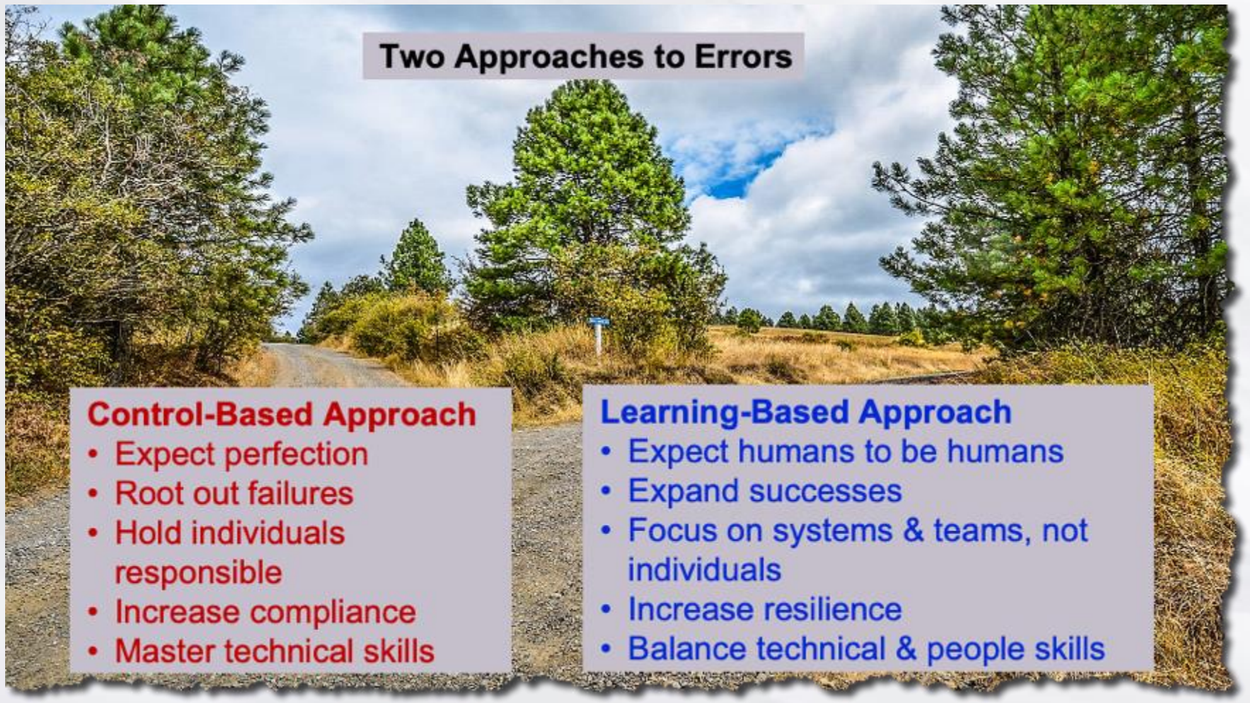

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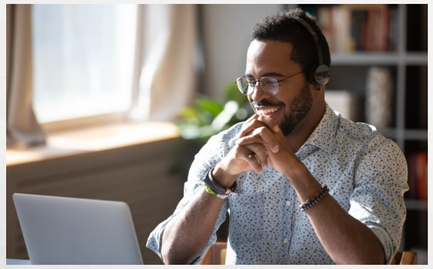

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The single greatest impediment to error prevention in the medical industry is that we ***punish people for making mistakes.***

Lucian Leape, MD
of the Harvard School
of Public Health, in testimony
before Congress on Health
Care Quality Improvement

Increase what you *do* want

(instead of reducing what you don't want)

Create Psychological Safety

“Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, ***or mistakes****.”*

~ Amy Edmondson, Harvard University. Author of *"The Fearless Organization: Creating Psychological Safety in the Workplace for Learning, Innovation, and Growth"* (2019)

Edmonson’s research study on eight teams in two hospitals

Medication errors per 1000 patient-days

Blame-Based Teams

“You’re guilty if you make a mistake...Heads will roll”

24

Psychologically Safe Teams

“Problems exist here, but we have very candid conversations about them.”

2

Edmonson‘s Article

Research study on eight teams in two hospitals

Medication errors per 1000 patient-days

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Psych Safety-Based Teams

“Problems exist here, but we have very candid conversations about them.”

2

Learning From Mistakes Is Easier Said Than Done: Group and Organizational Influences on the Detection and Correction of Human Error Amy C. Edmondson
Harvard University -- THE JOURNAL OF APPLIED BEHAVIORAL SCIENCE, Vol. 40 No. 1, March 2004 66-90

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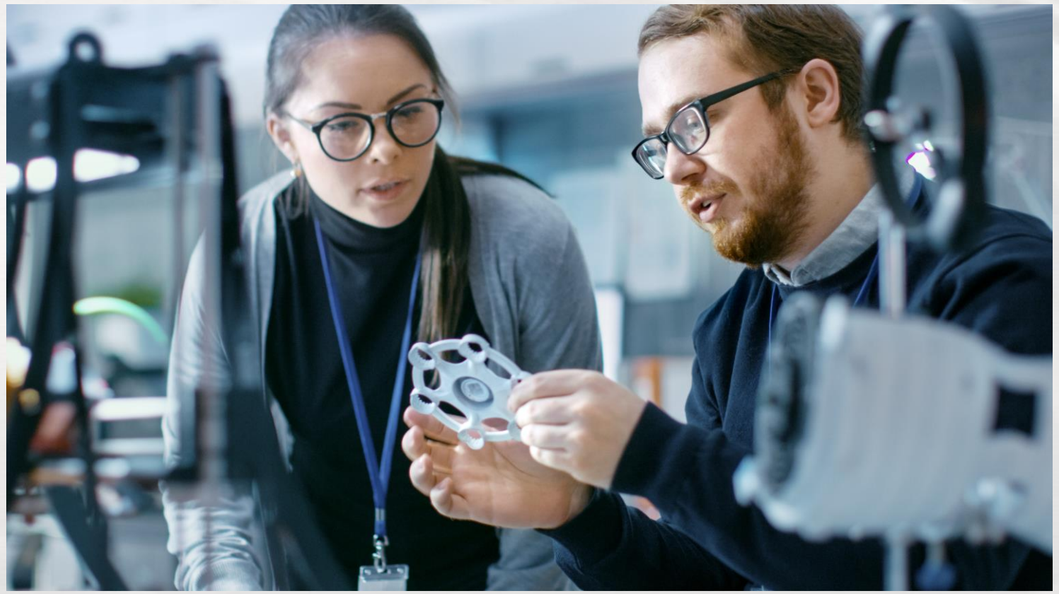
One Practical Step for 2) Create Psychological Safety



After an error, instead of saying, *”Joe failed to do [X]...”* ask...

“What DID Joe do, and why did it make sense for him (at the time) to do that?”

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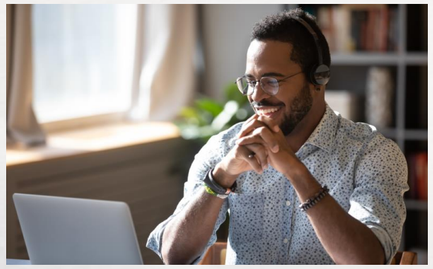

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“At the National Training Center the principal learning experiences were the after action reviews (AAR) that took place as soon as possible after each force-on-force and live-fire mission and at the end of a unit's rotation.”

From http://www.history.army.mil/html/books/069/69-3/CMH_Pub_69-3.pdf

“The Army's After Action Review (AAR) is arguably one of the most successful organizational learning methods yet devised.

Peter Senge, Author of
“The Fifth Discipline: The Art & Practice of the Learning Organization”

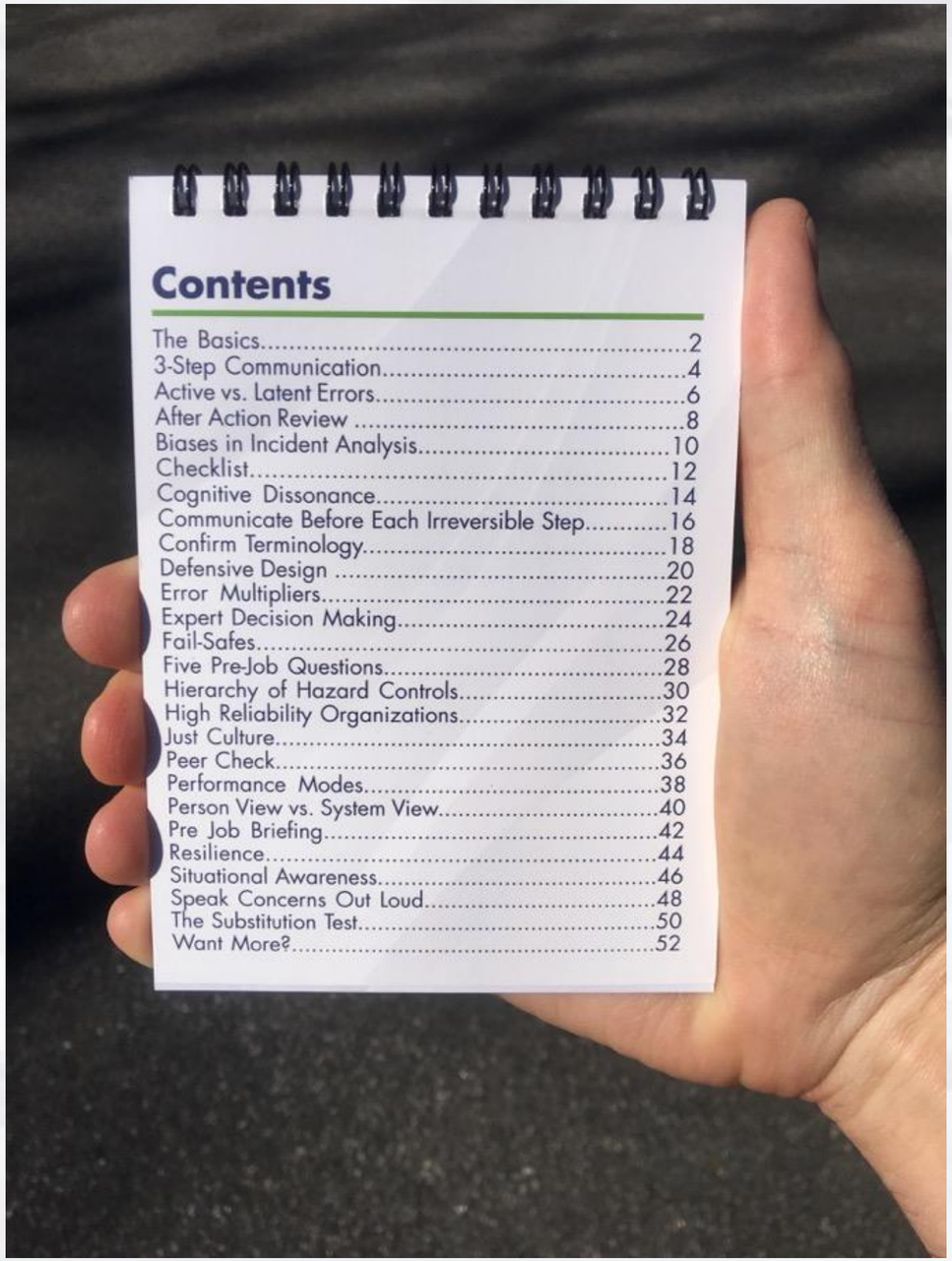
After Action Review (AAR)

1) ***What did we set out to do?***
2) ***What did we actually do?***
3) ***Why did it turn out that way?***
4) ***What will we do differently next time?***

Front-line experts directly involved in a job gather to discuss these questions about a recent job they did together. Best 2-8x per month.

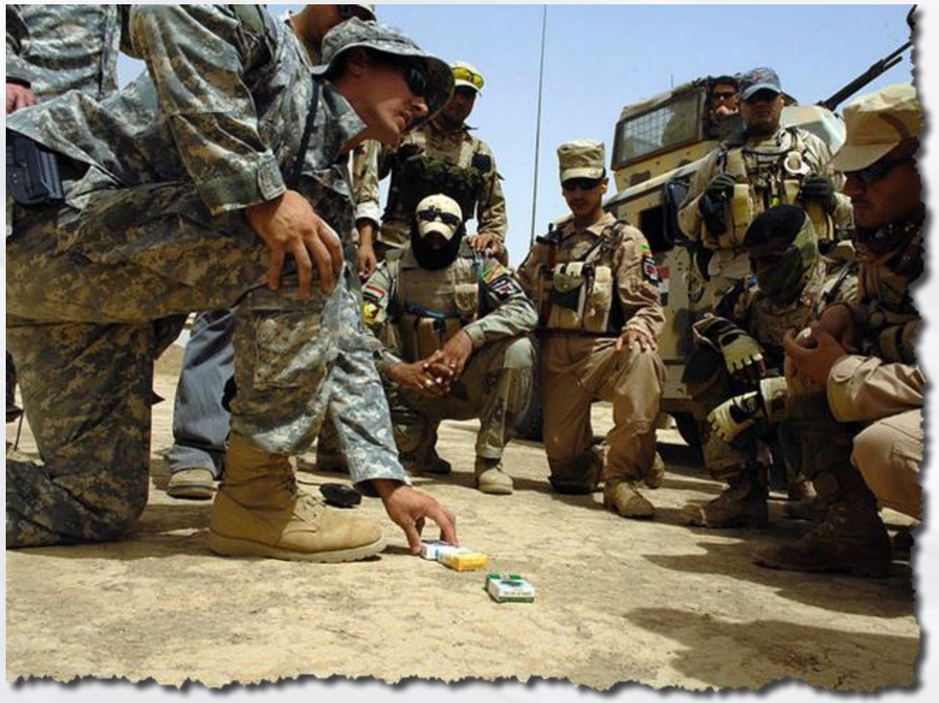
After Action Review p.8

https://www.reliableorg.com/shop

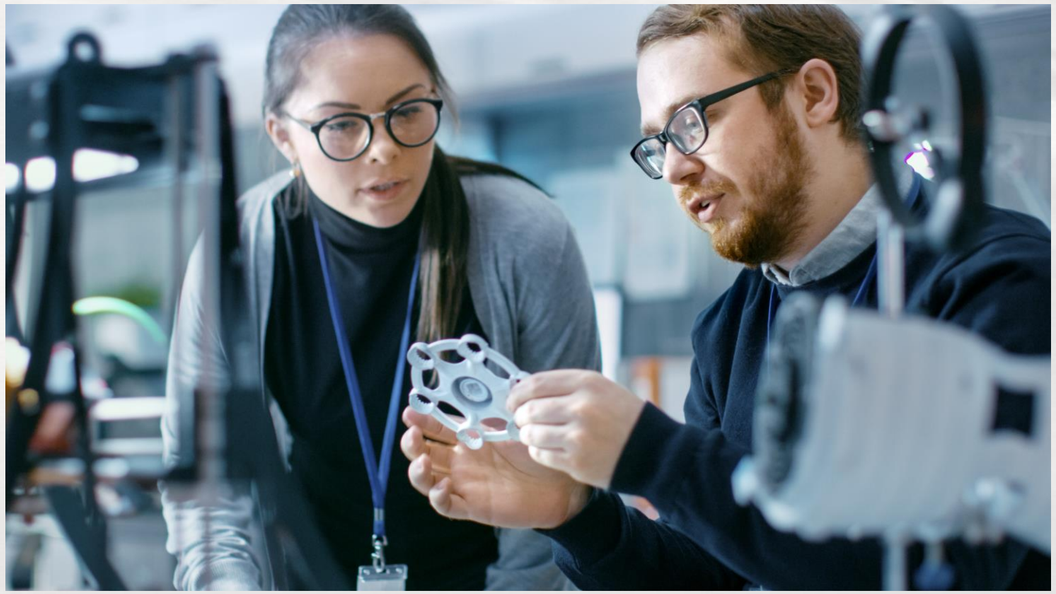


Poll – Do you lead After Action Reviews (AARs)?

https://docs.google.com/forms/d/1zHTVjuz_lbzkLLljuCSNC_TWG9K8Ri4BVGj43V80Hvg/edit



One Practical Step for 3) Lead After Action Reviews (AARs)



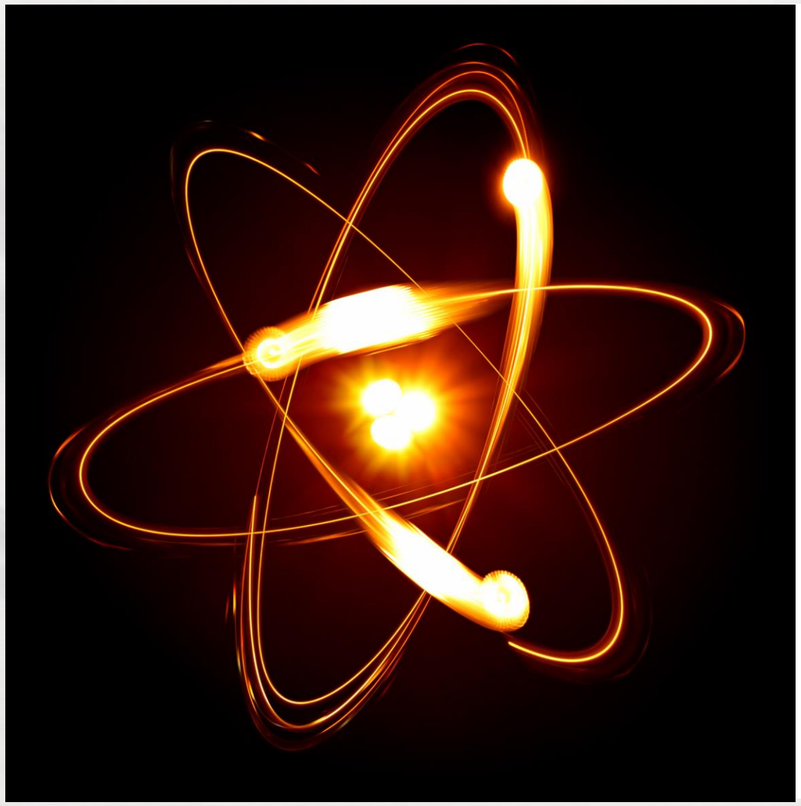
After your next successful, complex project, instead of asking, *"What could we have done better?"*, ask...

1. *What did we set out to do?*
2. *What did we actually do?*
3. *How did it turn out that way?*
4. *What will we do differently next time?*

Use AARs to transform investigations (fix the blame) into learning-focused Event Debriefs (fix the problem).

Sandy's story.

https://www.reliableorg.com/post/how-three-technical-experts-improved-reliability-safety-employee-engagement



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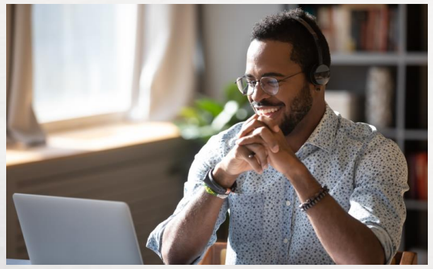

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3-Step Communication

How to do it

Peer Check

Checklist

Write a checklist of key steps for each complex
ant manuals and get
erts to write your

Communicate Before Each Irreversible Step

Clear!

Says a doctor defore defibrillating a patient in cardiac arrest

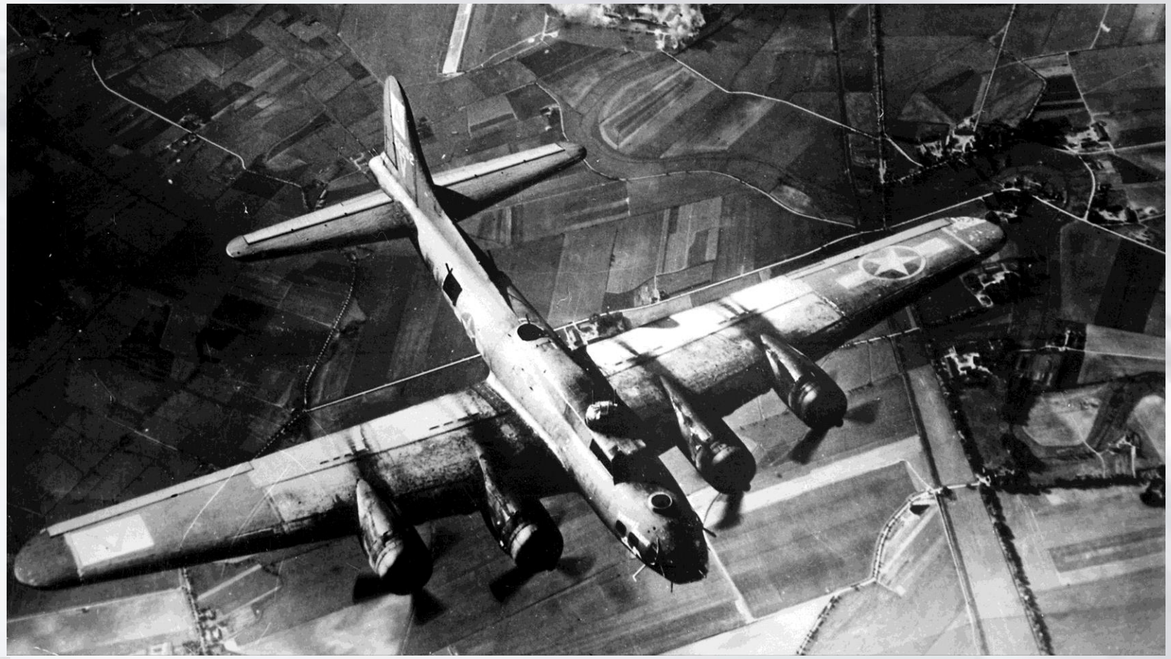
Confirm Terminology

How to do it

- Identify all the terms that you and your team are most likely to misunderstand or miscommunicate in this project.

Do classic defenses work?

Before checklists



After checklists

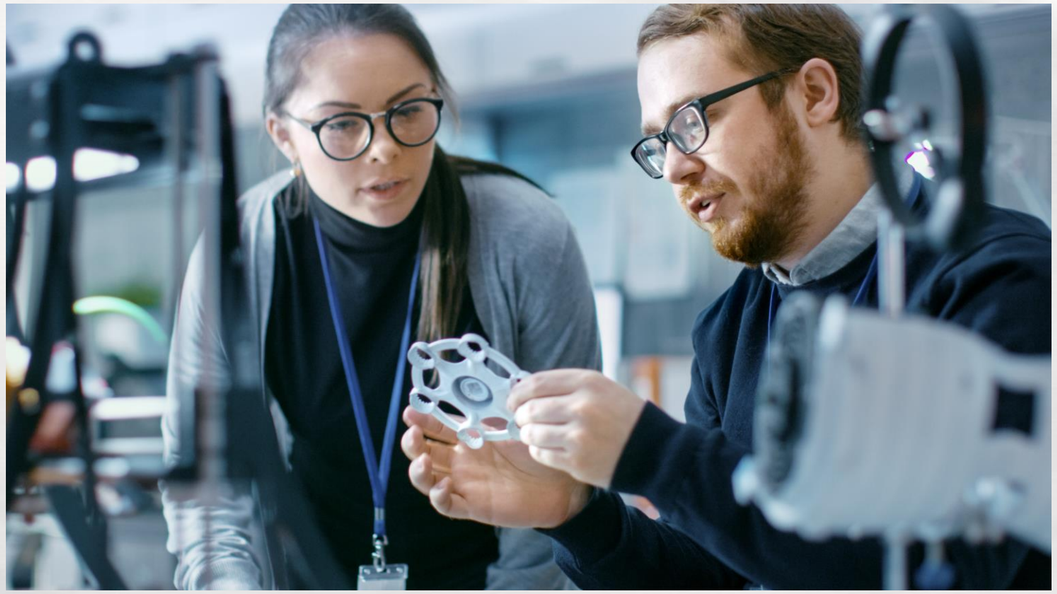
1.8 million miles of missions in WWII

0 deaths from human errors

Still in use today 85 years later.

One Practical Step for 4) Apply Defenses

Pick a job that you and your team regularly do. Write a checklist for that job that includes ONLY the 5-7 items most often missed. Let me know how it goes!
jake@reliableorg.com



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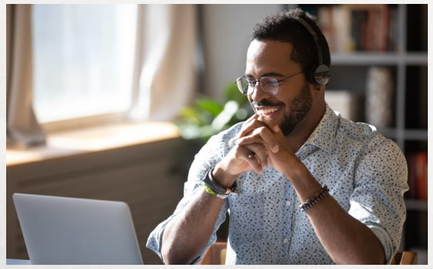

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“You cannot change the human condition.

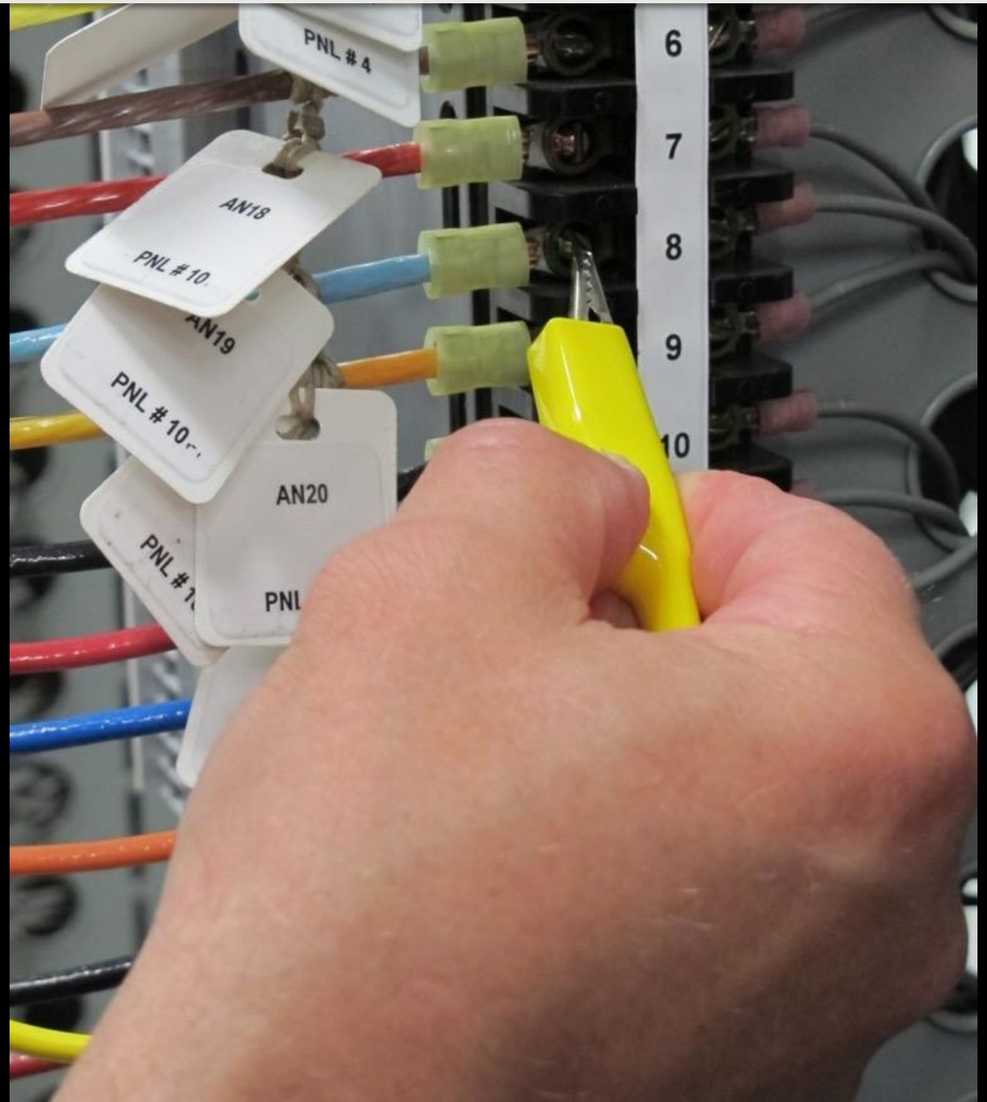
But you can change the conditions under which humans work.”

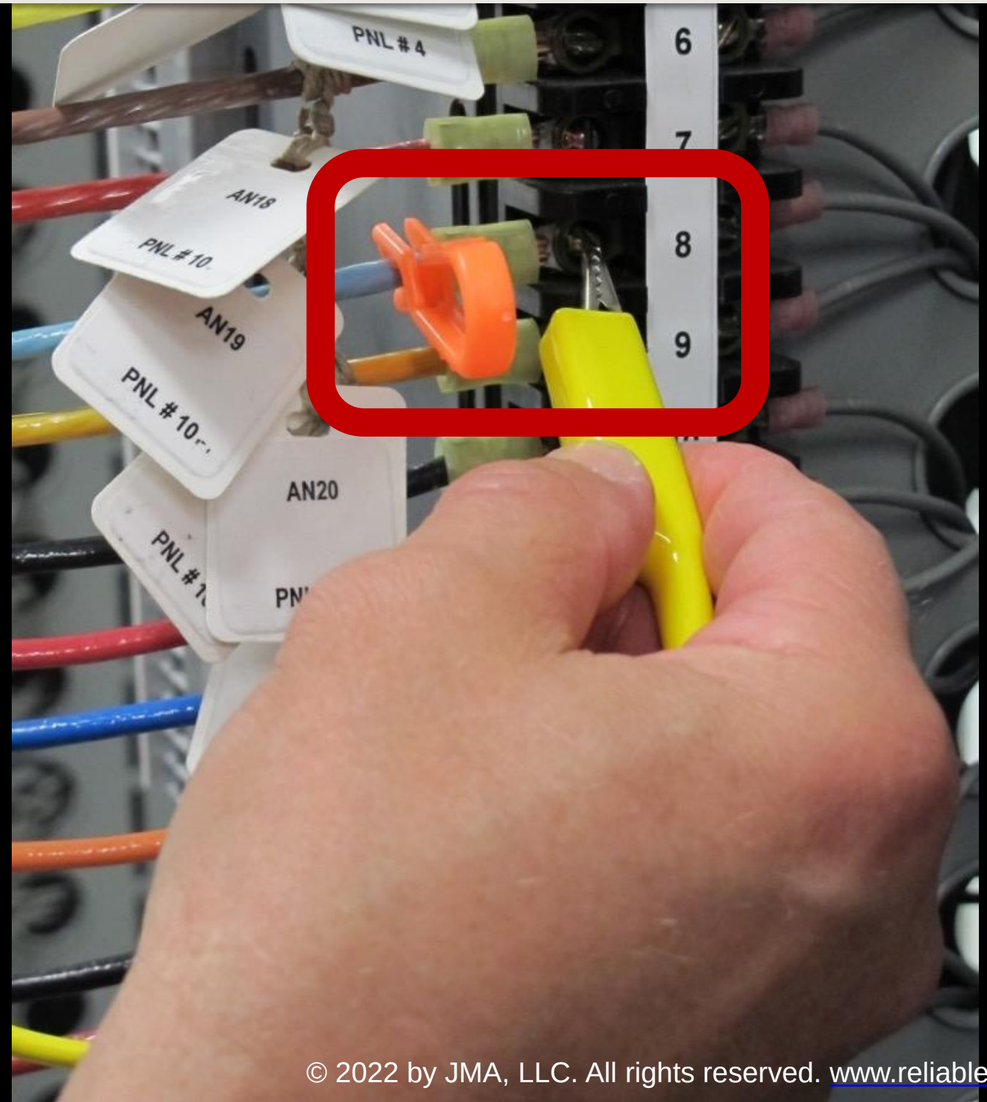
~ Dr. James Reason
30+ year researcher of
Human Error

Problem: Substation relay techs energize wrong wires after 6-8hrs repetitive work

Person-Based: More procedures, more rules, more training

System-Based: Simple, user-friendly, easy-to-use wire markers

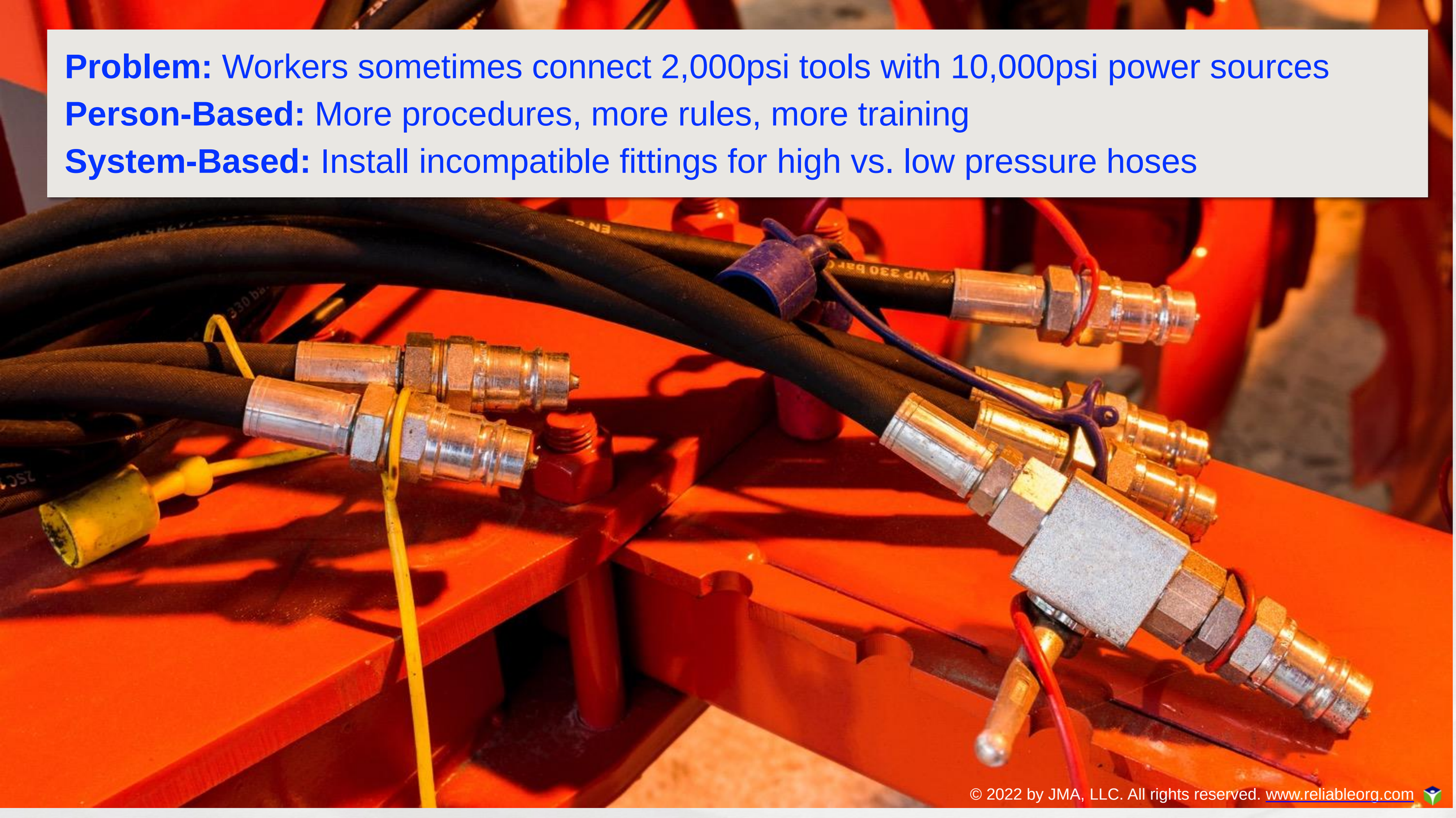




Problem: Workers sometimes connect 2,000psi tools with 10,000psi power sources

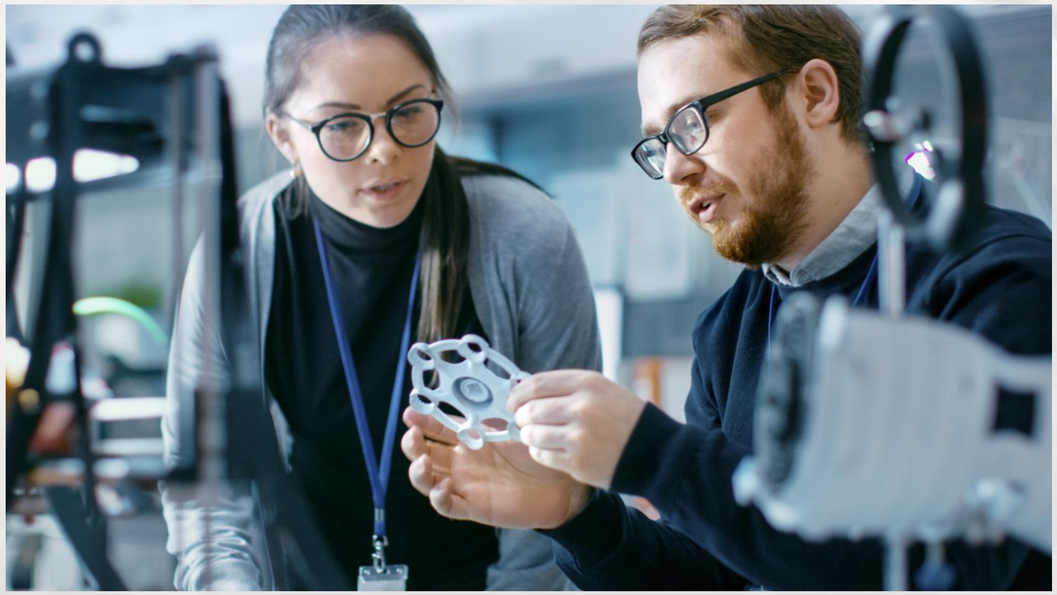
Person-Based: More procedures, more rules, more training

System-Based: Install incompatible fittings for high vs. low pressure hoses



One Practical Step for 5) Improving Processes

Pick a process that you regularly do. Brainstorm with trusted colleagues one low-cost, low-risk, low-fear, low-maintenance, non-mechanical process improvement that would make it harder for people to do the wrong thing, ***and easier for them to do the right thing*** (in that process).



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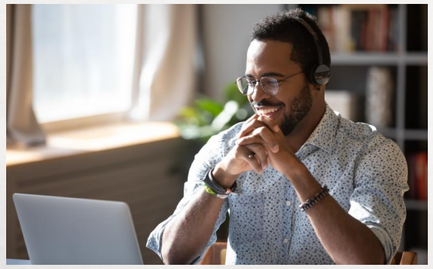

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7) Tell Stories That Change Minds

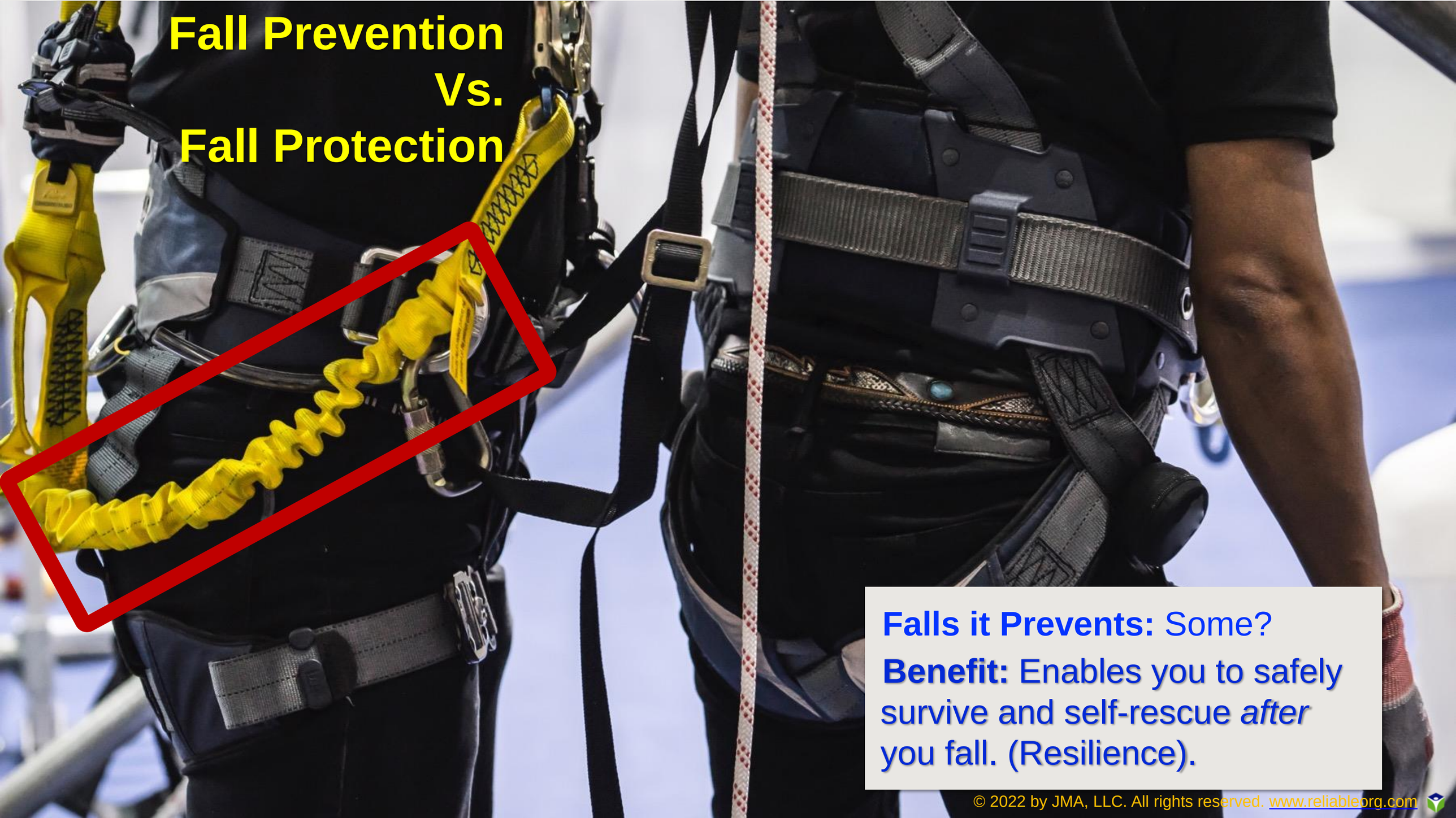
“The hallmark of a High Reliability Organization (HRO) is not that it is error-free, but that errors do not disable it.”

~ Weick & Sutcliffe,
Managing the Unexpected"
p.21

Errors it Prevents: Zero

Benefit: Enables you to quickly, easily recover lost work *after* you make an error. (Resilience).

Fall Prevention Vs. Fall Protection



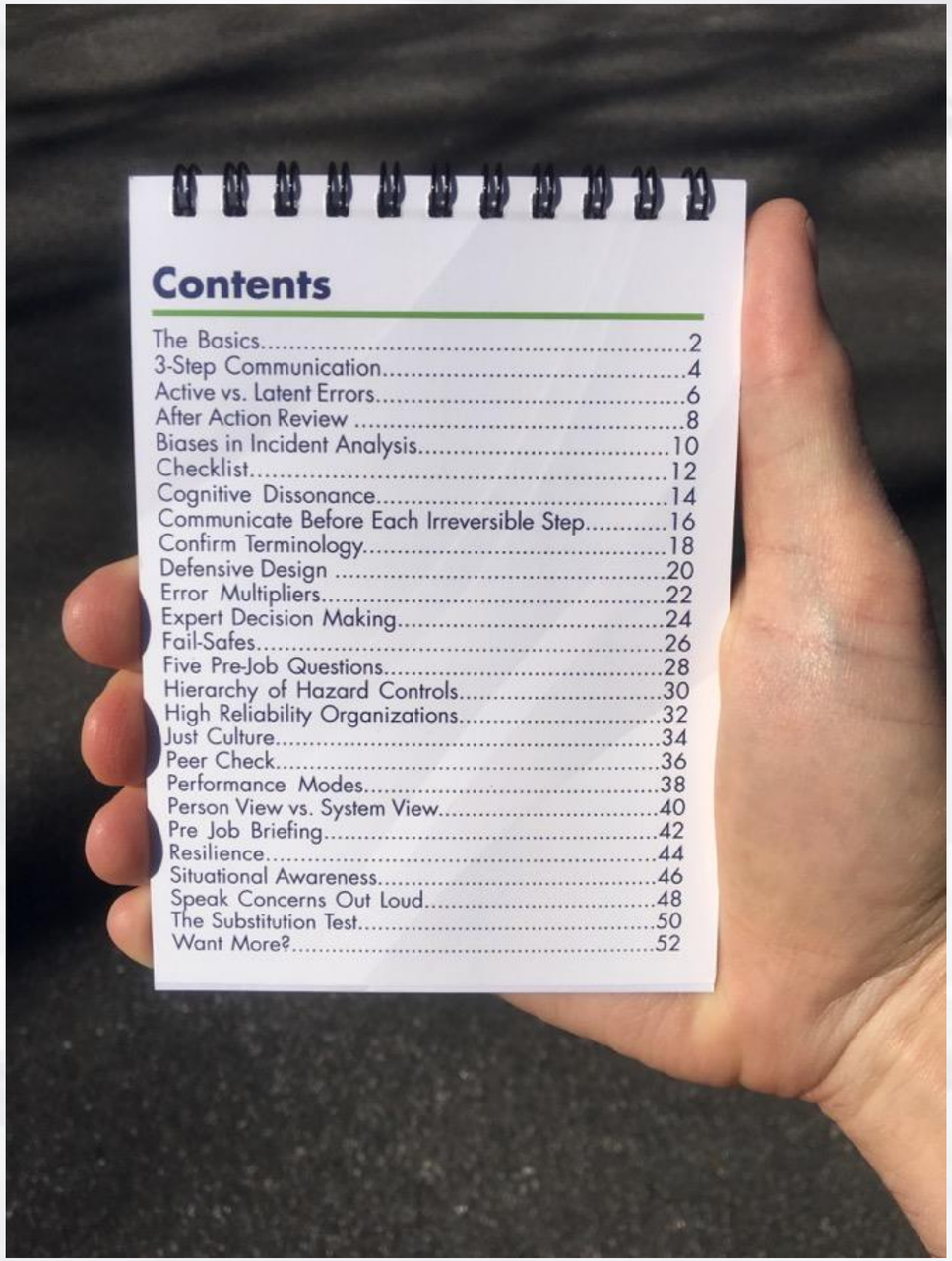
Falls it Prevents: Some?

Benefit: Enables you to safely survive and self-rescue *after* you fall. (Resilience).

- United Parcel Service (UPS)
- 288 aircraft & 11 airports
- Unwanted surprises are common
- “Hot Spares”
- Ready to fly in ~ 2 hours

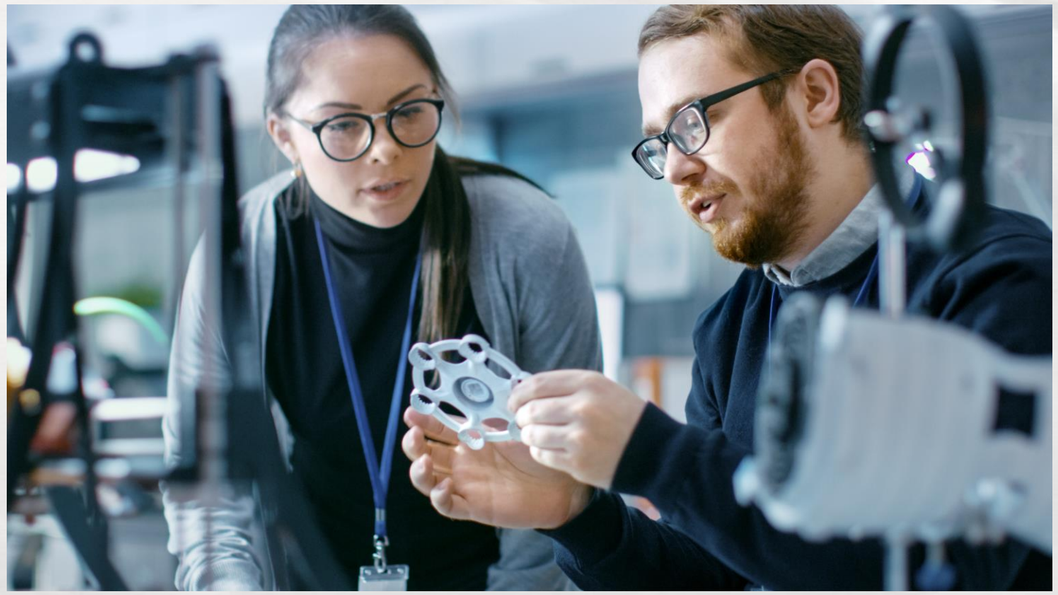
- In 2014, UPS deployed hot spares 275 times...
- To rescue 1.5 million packages...
- ***That saved $32 million in revenue***

Resilience, p.44



One Practical Step for 6) Build Resilience

Pick a process that you regularly do. Identify one serious error that is impractical to prevent. Brainstorm with trusted colleagues one low-cost “resource-in-reserve” you could deploy to recover from that error quickly, easily, inexpensively, safely.



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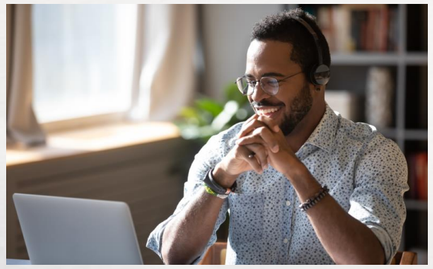

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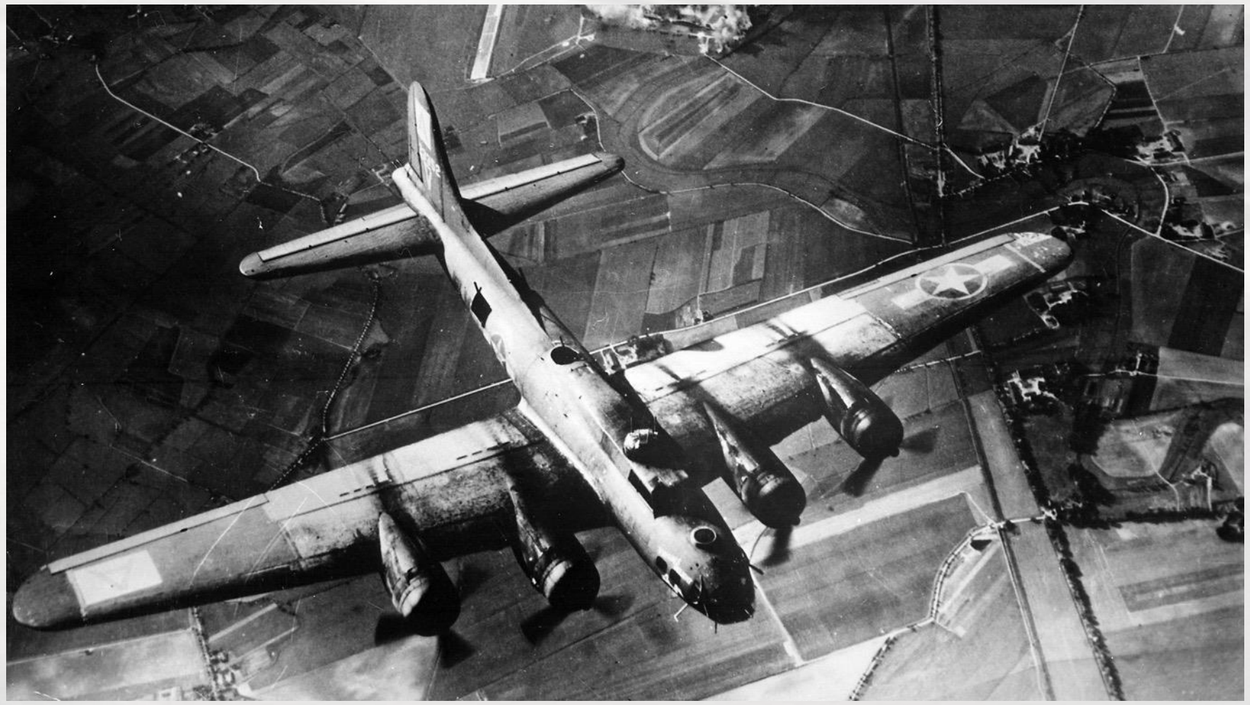
“Jake presented a keynote address at the NERC Human Performance Conference nearly 10 years ago...

He told the story of the Human Performance tool that helped the Allies win WWII. I have copied and applied aspects of Jake’s presentation style, because it was so effective with me.

Nearly 10 years later, in a speech of my own, I recalled Jake’s presentation, impactful style, and the lessons that have stuck with me ever since.”

~ David Costello , Chief Sales & Service Officer, Schweitzer Engineering Labs



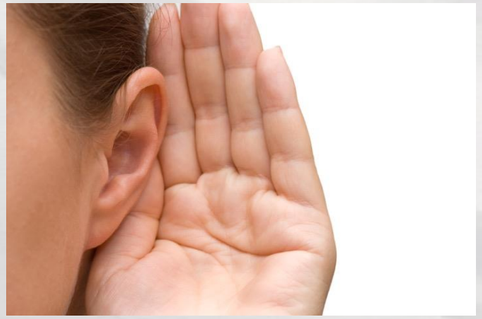
High-Quality Stories “Stick” in our minds and influence us for years

- How one doctor in Baltimore saved 1,500+ lives with Human Performance
- How UPS dramatically reduced serious crashes and injuries *and* saved $100+ million per year via Human Performance
- How a 1943 insight revolutionized aviation safety and created Human Factors Engineering

Use Stories to...

Convince Skeptics

“Mike was a carpenter who loved the freedom of working for himself. One day, he left his safety glasses in the truck, just to quickly finish up 3-4 strips of siding with his nail gun...”



Share Incidents, Near Misses & Lessons Learned

“*The structure for the story-style case studies that we use at Lewis originally came from Jake.”*

~ Elizabeth Lay, Director of Safety & Human Performance, Lewis Tree Service

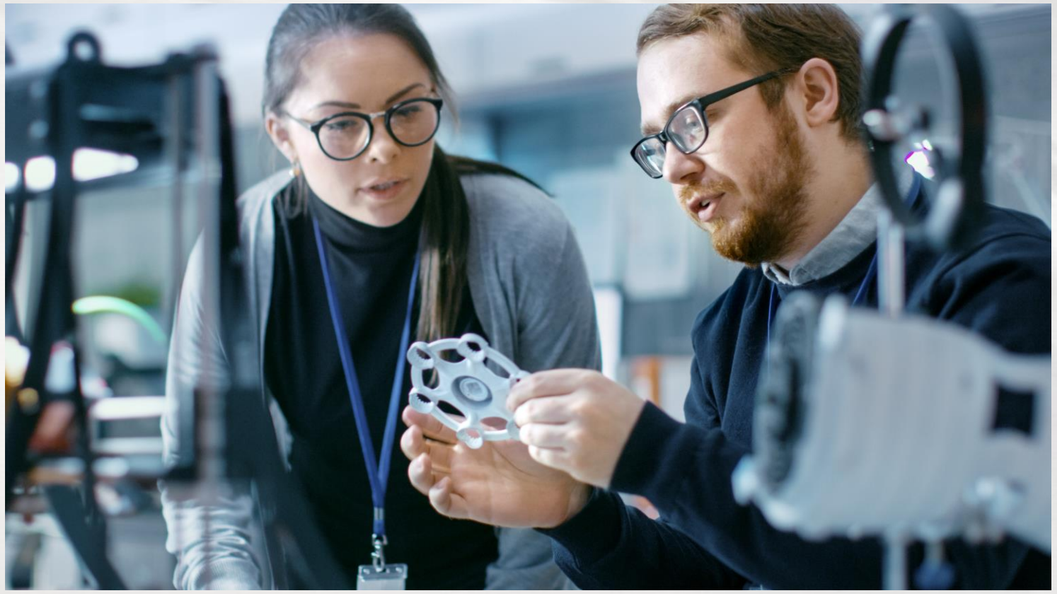
Teach Challenging New Concepts

“It was a cold October morning at Wright Airfield in Dayton, Ohio. The year was 1935. On the field that day were eight of the Army Air Corps’ best test pilots, and a group of generals who had a secret…”

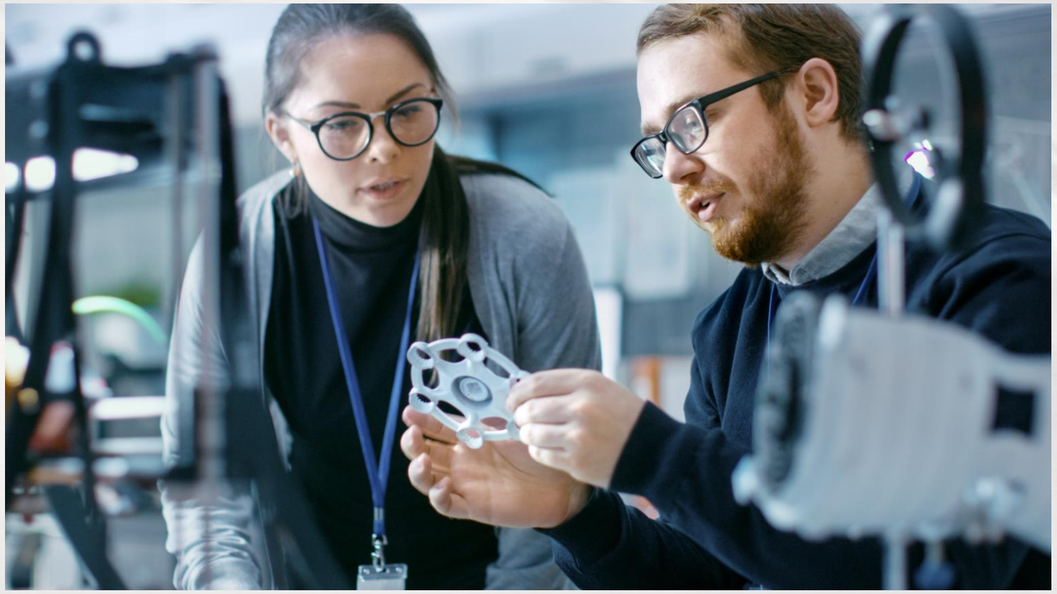
One Practical Step for 7) Telling Stories That Change Minds

Pick one idea that you need to effectively communicate to others.

Before you explain your idea to them, tell a *story* that makes your audience *curious* to hear more about your idea.



One Practical Step for 7) Telling Stories That Change Minds



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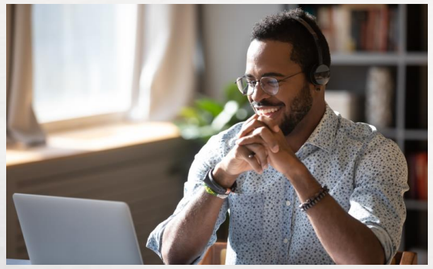
To see a great example, watch the 60-second story at the start of a TED Talk called "The Walk from No to Yes." From negotiator William Ury.

Seven Practical Steps to Improve Safety & Human Reliability

1) Take a Learning-Based Approach



2) Create Psychological Safety

3) Lead After Action Reviews

4) Apply Defenses

5) Improve Processes

6) Build Resilience

7) Tell Stories That Change Minds

Questions?

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