



vPSI Group, LLC

**PRAGMATIC INCLUSION
OF HUMAN PERFORMANCE
FACTORS IN INCIDENT
INVESTIGATIONS**

Houston Calgary Perth

www.vpsigroup.com

Pragmatic Inclusion of Human Performance Factors in Incident Investigations



Norman Ritchie, vPSI Group, LLC Houston, Texas

Norman Ritchie has worked in oil and gas for over 30 years. Educated as a Mechanical Engineer at the University of Glasgow in Scotland, he has gained broad expertise through engineering and management positions in exploration, production and capital projects. Ritchie's experience covers the full hydrocarbon development life cycle from conceptual design to decommissioning.

Since 1997, Ritchie has consulted in project management and enterprise risk management. As a Director of vPSI group, LLC, which he co-founded in 2003, Ritchie provides consulting and training in performance measurement and improvement, principally in the areas of risk, loss prevention, safety, problem solving and human factors.

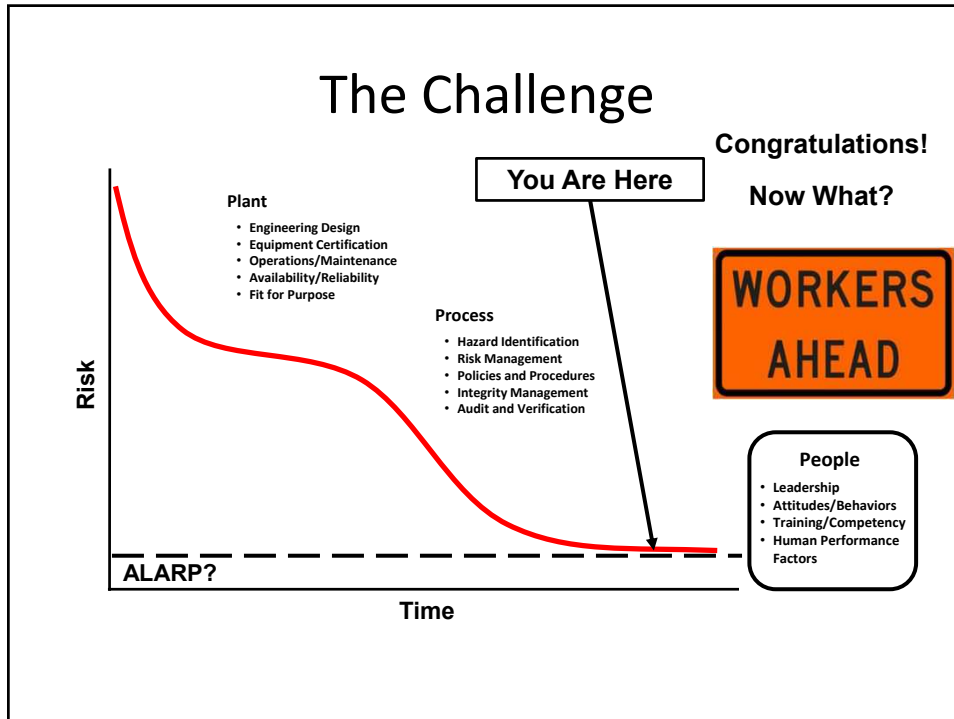
Ritchie holds a broad US patent for online JSA Systems and is a past Chair of the Houston Energy Corridor Section of the ASSP's Gulf Coast Chapter.

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Pragmatic Inclusion of Human Performance In Incident Investigation



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The Challenge

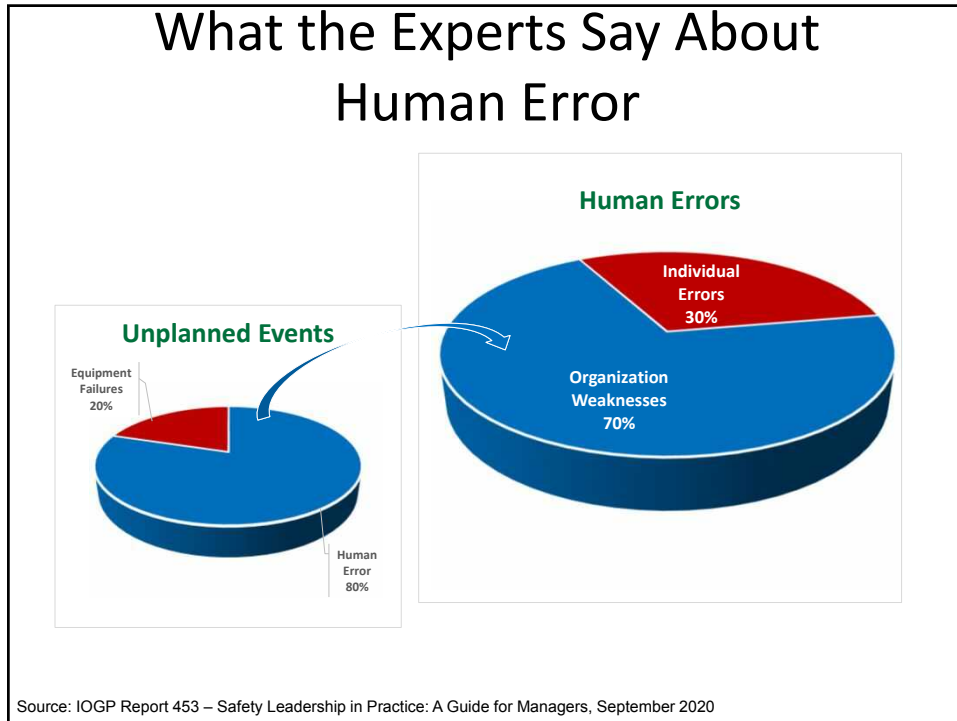
- **Humans are complicated and unavoidable**
- **Certain types of Human Failure are not preventable**
- **Influencing Human Behavior is not easy**
- **Limited manpower and supervisory resources**
- **Traditional supervisory and management behaviors are culturally embedded**
- **Preventive and Corrective Actions differ according to the Human Performance Failure type involved**

WORKERS AHEAD

People

- Leadership
- Attitudes/Behaviors
- Training/Competency
- Human Performance Factors

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Human Performance Failure Types

Slip

Lapse

Mistake

Violation

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Slips & Lapses

- **Part of being human**
- **5 to 10 per person per hour**
- **Exacerbated by fitness for duty issues**

Mistakes & Violations

- **Need to understand the context as there are different drivers of both**
- **For example, was the violation willful and malicious? Or, was it 'the way we do things around here'?**

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Violations

6 types, mostly rational responses to work context and occur after risk-based benefit / cost assessment.

- Unintentional – breaking a rule because it has been misunderstood or misinterpreted.
- Situational – it is not possible to do the job following the rules.
- Exceptional – deviation from rules under unusual circumstances.
- Organizational benefit – breaking the rules for the (real or assumed) benefit of the employer.
- Personal benefit – there is some reward for the individual – it is less effort, faster or more exciting to break the rules.
- Reckless – breaking rules despite known dangers.

Based on Energy Institute Briefing Not #12 Human Error & Non-Compliance 2011

Human Failure in an Unplanned Event

Person did something other than what they intended to do

OR

Person acted as they intended, but should have done something else to satisfy our expectations

Inadvertent At-Risk Action

Deliberate At-Risk Action

Action Error

Action-based "Slip"?
e.g. inattention
Misstep

Memory-based "Lapse"?
e.g. forgetfulness
omission

Person believed act to be correct

Thinking Error

"Mistake"

Rule-based?
e.g. misapply experience to novel situation

Knowledge-based?
e.g. insufficient or incorrect procedure, miscommunication

Person knew act was not correct

Deliberate Non-Compliance

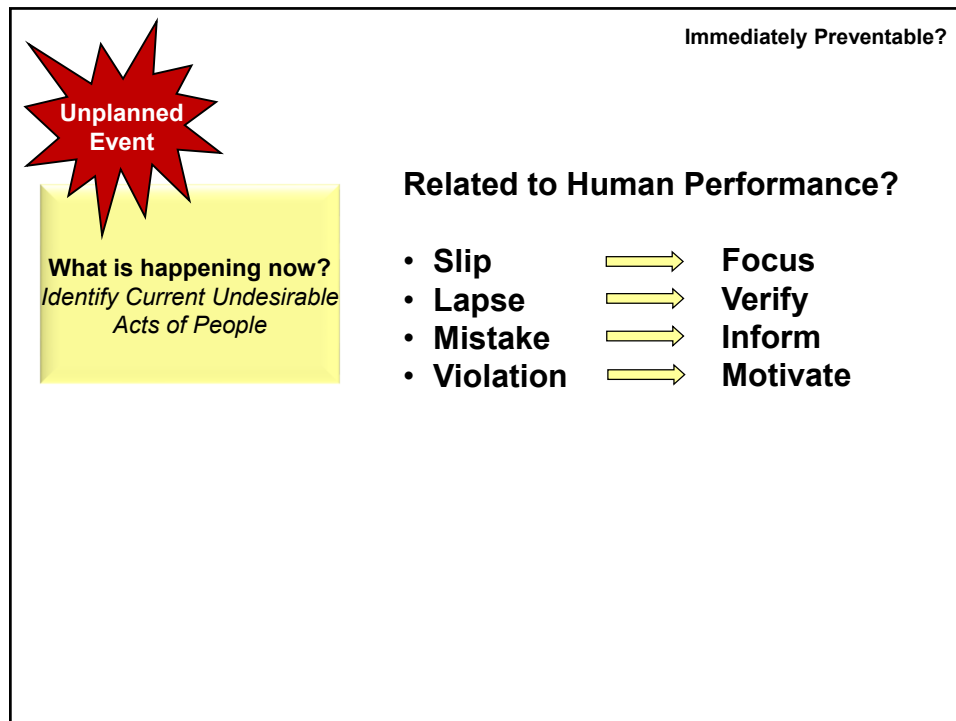
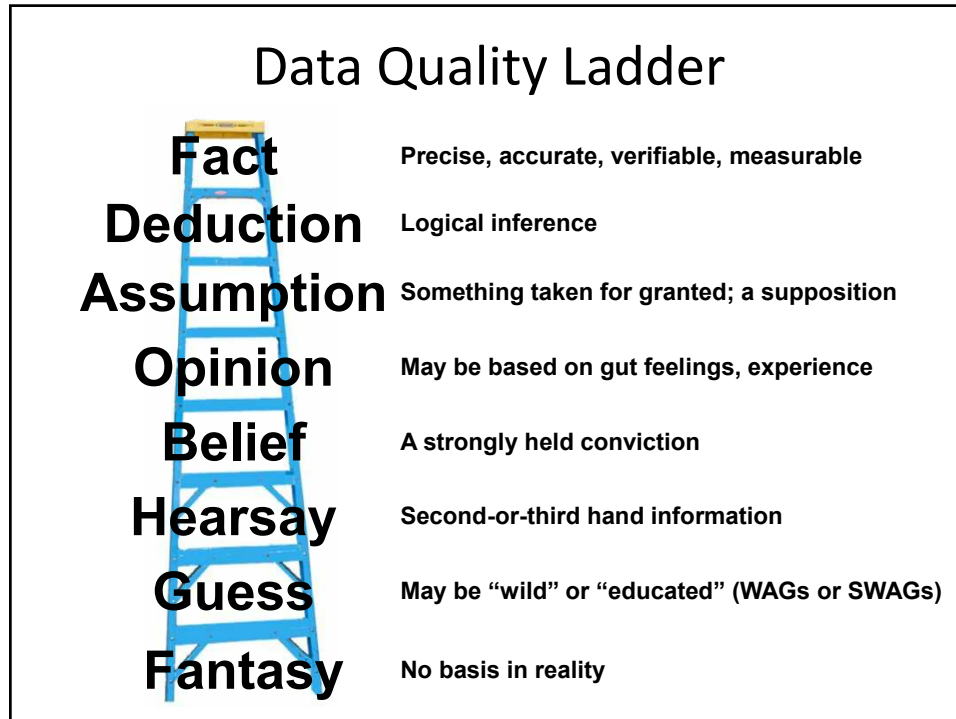
"Violation"
e.g. deviates from procedure

Routine? Enabled?
Situational? Difficult?
Exceptional? Non-Enabled?

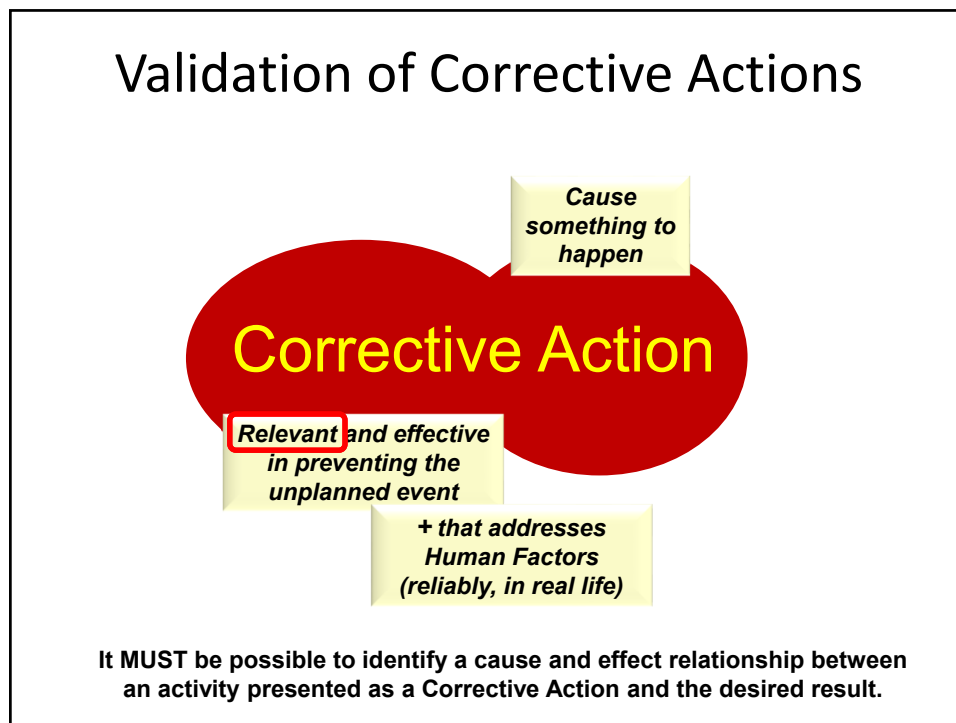
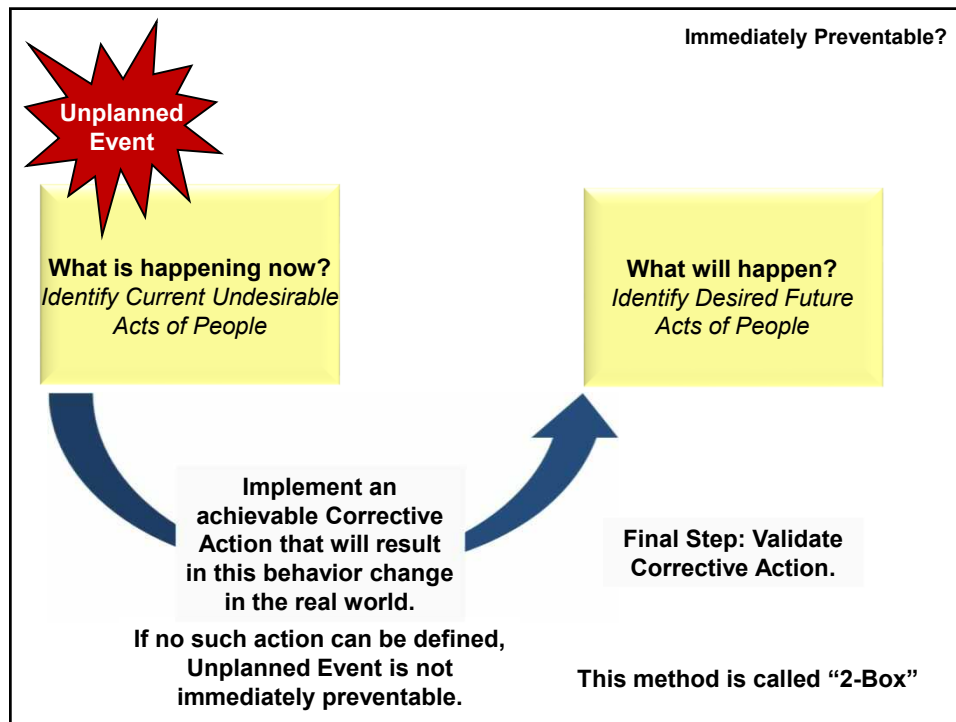
Is the evidentiary basis sufficient to differentiate?



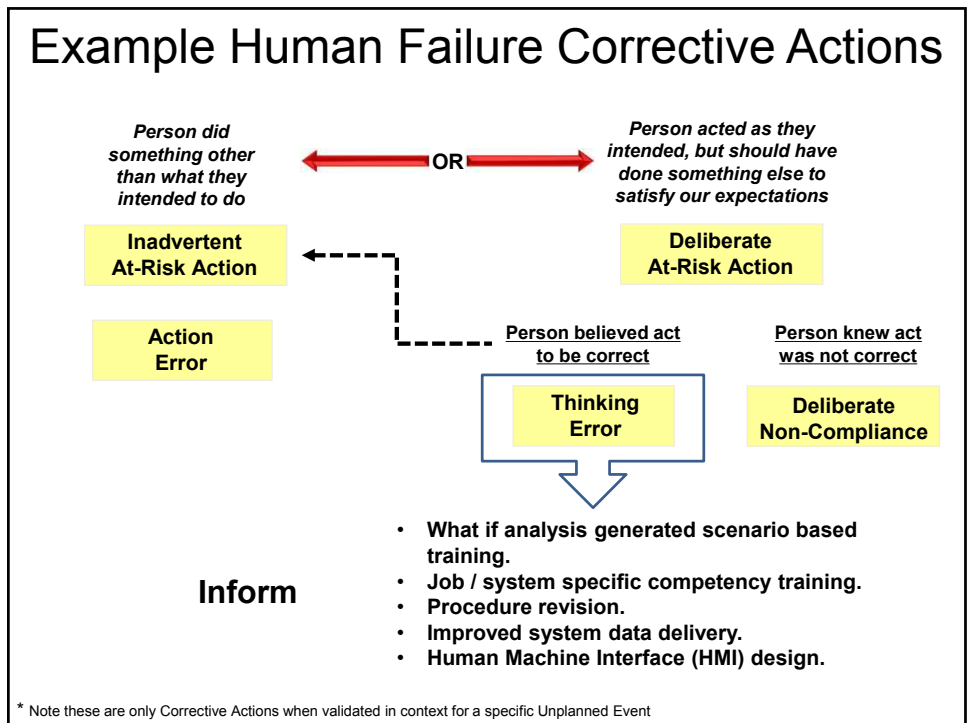
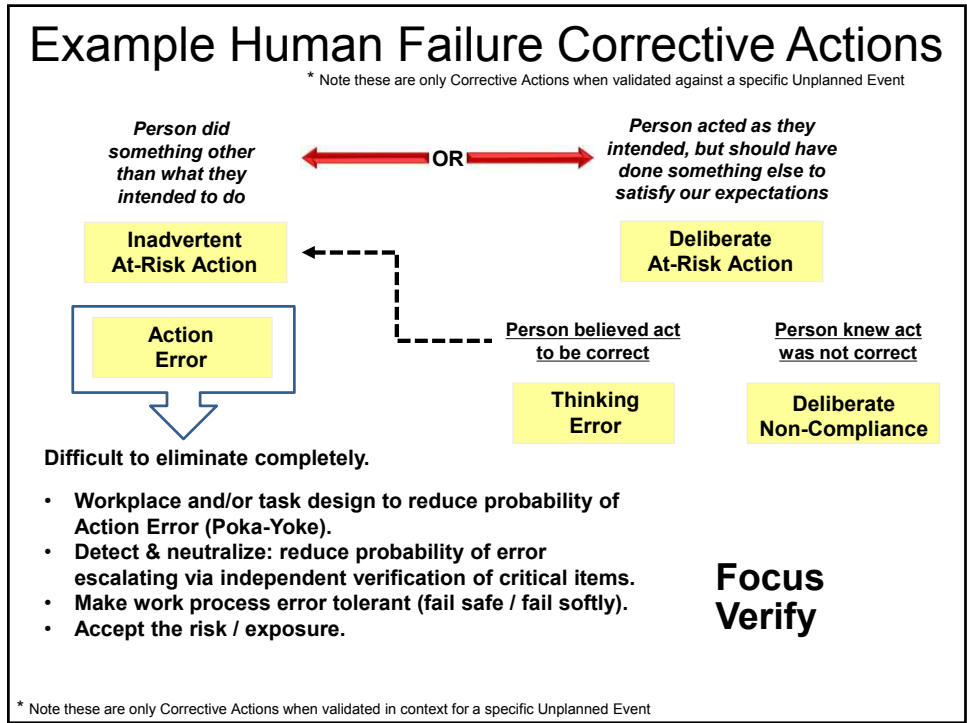
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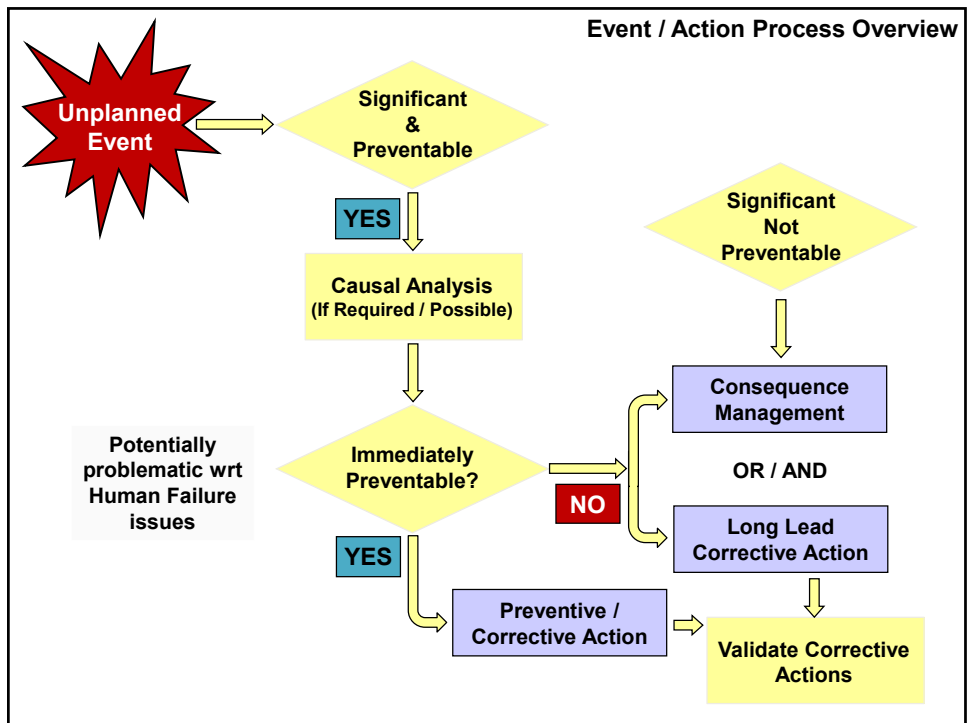
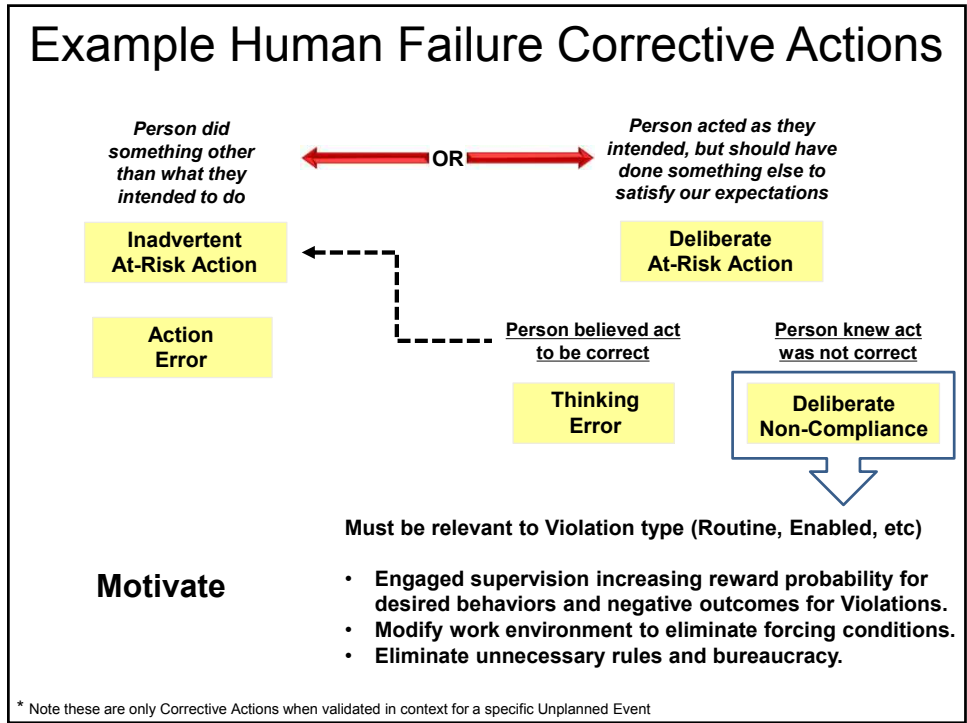
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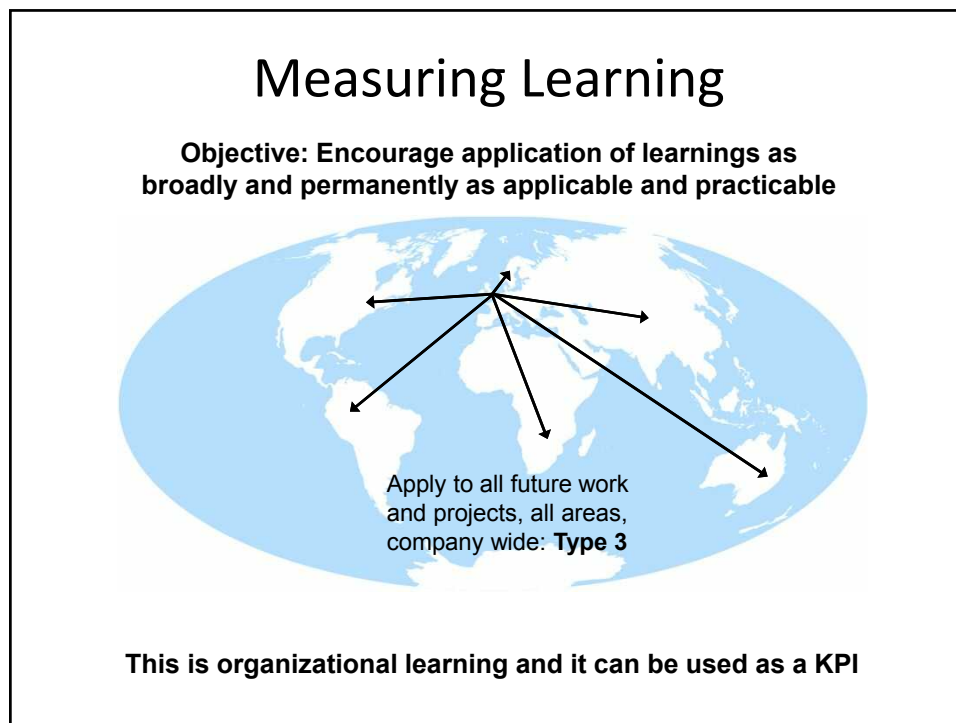
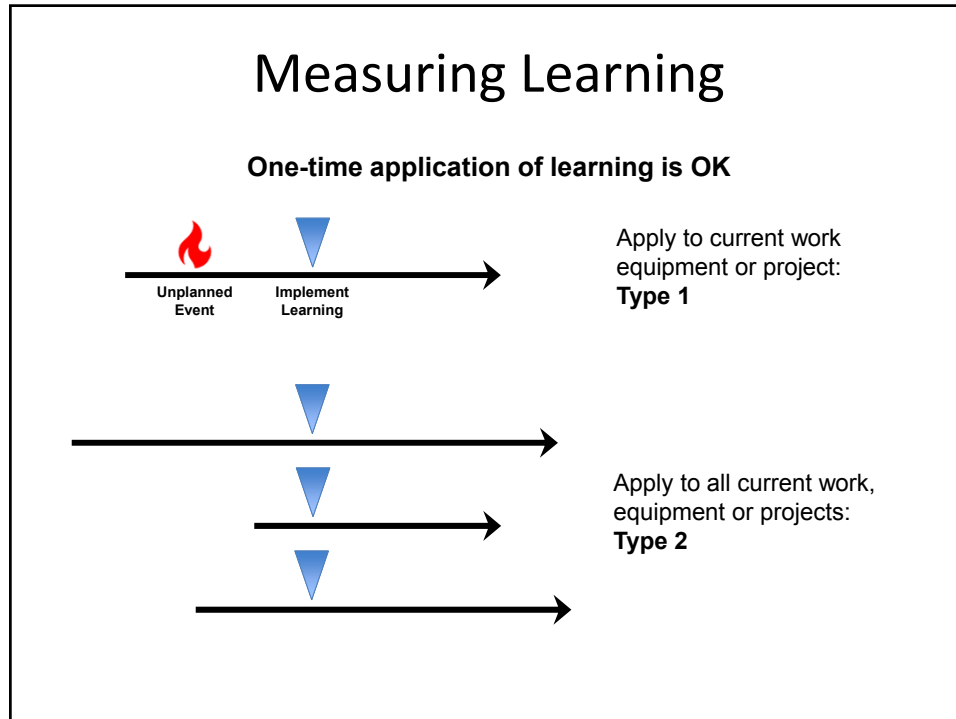
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Actions You Can Take Right Now

- **Gap / Opportunity Analysis of current processes from Human Performance perspective**
- **Implement significance and preventability filters**
- **Facilitate HAZOP-like Human Performance risk reviews**
- **Develop and train onsite Data / Evidence Gathering Protocol to allow incorporation of Human Performance in incident investigation process**
- **Train personnel in resource efficient and effective analysis of Human Performance issues**
- **Train personnel in development of efficient and effective corrective actions against Human Performance issues**
- **Measure the effectiveness of the organization's response to Unplanned Events, including those involving Human Performance**

* Note "Train" in this context means impart and maintain competence

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