



# Leveraging Technology to Manage EHS Systems

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# **System Safety as the Backbone of EHS Activities**

# Occupational Health and Safety Management Systems (OHSMS)



## ▶ At a very high level, what is Safety?

- “Freedom from Unacceptable Risk”

*(ISO Guide 51: 2014 Safety Aspects – Guidelines for their inclusion in Standards)*

## ▶ Defining System Safety

- The application of engineering and management principles, criteria, and techniques to achieve mishap risk as low as reasonably practicable (to an acceptable level), within the constraints of operational effectiveness and suitability, time, and cost, throughout all phases of the system life cycle.

*(ANSI/GEIA-STD-0010-2009 Standard Best Practices for System Safety Program Development and Execution )*

## ▶ In Summary:

“The system safety concept focuses on the application of systems engineering and systems management to the process of hazard, safety and risk analysis.”

# Key Components to a Systematic Approach to Safety



## Continuous Improvement

- Plan
- Do
- Check
- Act

## Identify

- Hazards
- Risk Exposure
- Opportunities for Improvement
- Risk Reduction

## Document

- System Approach
- Mitigation Measures
- Risk Acceptance

**Widespread industry agreement that formalized management systems improve the organizational performance.**

Examples include ANSI Z10, ISO 9000 and 14000 Series, OSHA VPP, and the upcoming ISO 45001.

# Pushing Past Traditional Approaches to Health & Safety

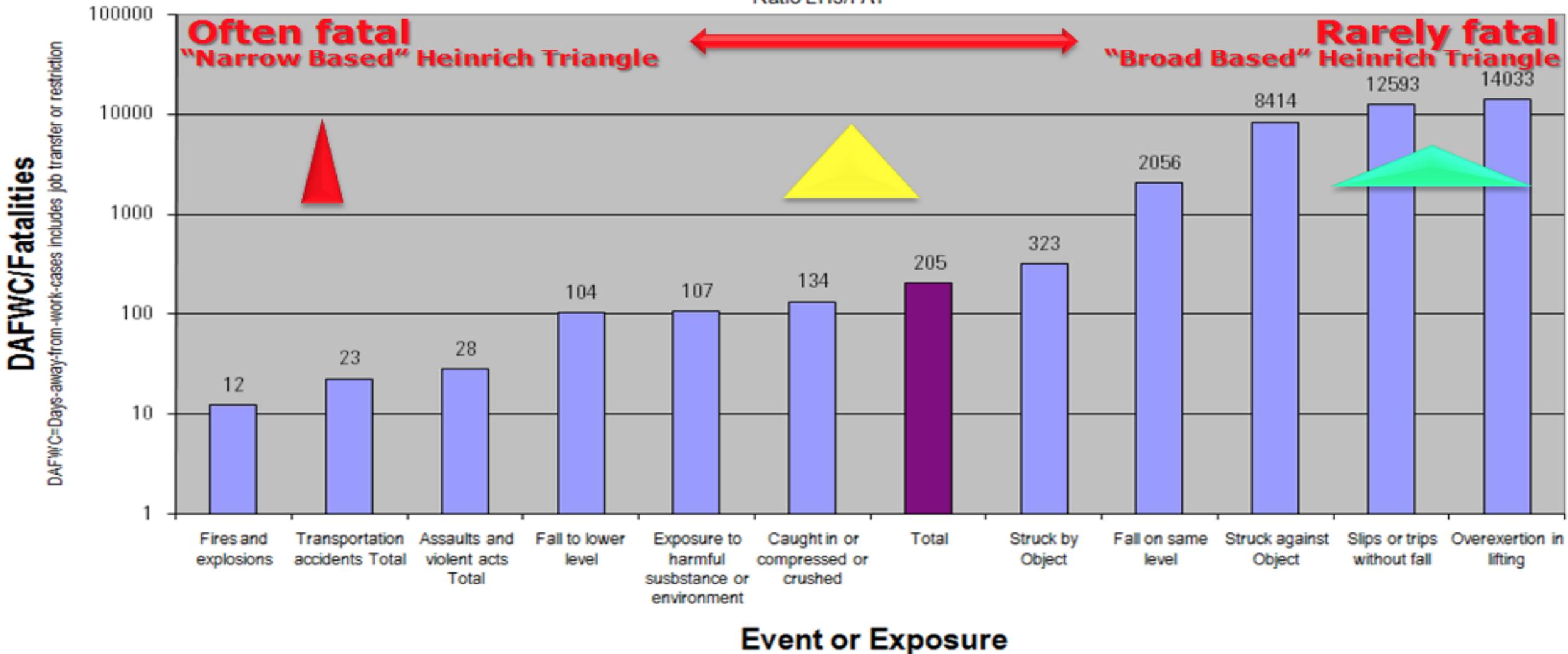


- ▶ *Utilizing all available tools and resources to enhance safety performance*
  - ▶ **Lean Business Tools**
  - ▶ **Technological Advances**
  - ▶ **Viewing EHS as a business driver to success**
  - ▶ **Embracing a holistic approach to the execution of the safety mission**
  - ▶ **Continually challenging the accepted norms**
  - ▶ **Making decisions based on data instead of relying solely on “gut feelings” or reactionary impulses**

# Root Cause Analysis should be performed for Hazards identified for Low-Probability High Consequence Events



(2007 data as published in March 2009 by US Bureau of Labour Statistics)  
Ratio LTIs/FAT



(Based on US BLS Occupational Injury and Illness Classification Manual)

# A Simple 5 Why Analysis is the most commonly used tool to identify the root cause of a problem to prevent reoccurrence of the hazard



## What is it?

Problem solving technique that helps to identify the root cause of a problem. Each time a problem occurs, “why” is asked to dive deeper into its causes in order to recognize and overcome them.

## When to use it?

Anytime in the problem solving process. This tool can be used up front to see if you can derive the root cause without any major resource commitment.

## 5 Whys – template

Problem

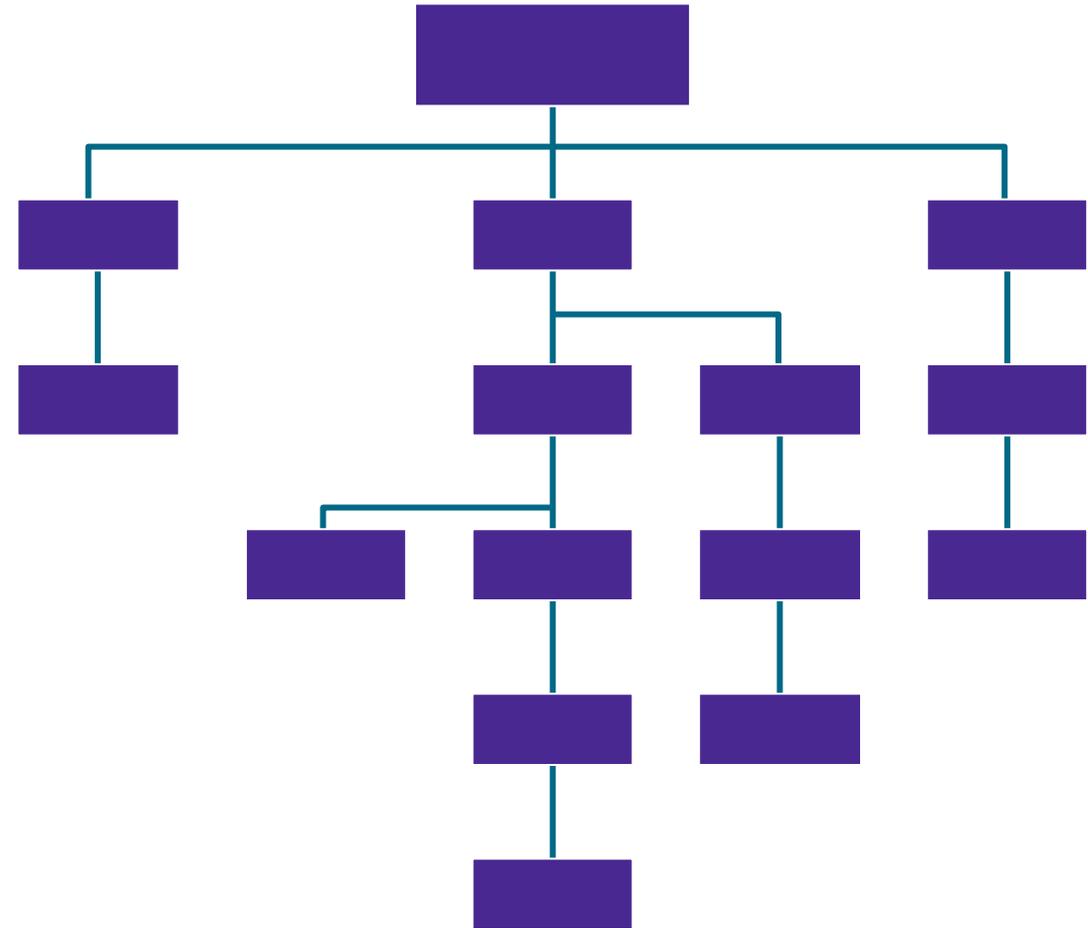
1. Why?

2. Why?

3. Why?

4. Why?

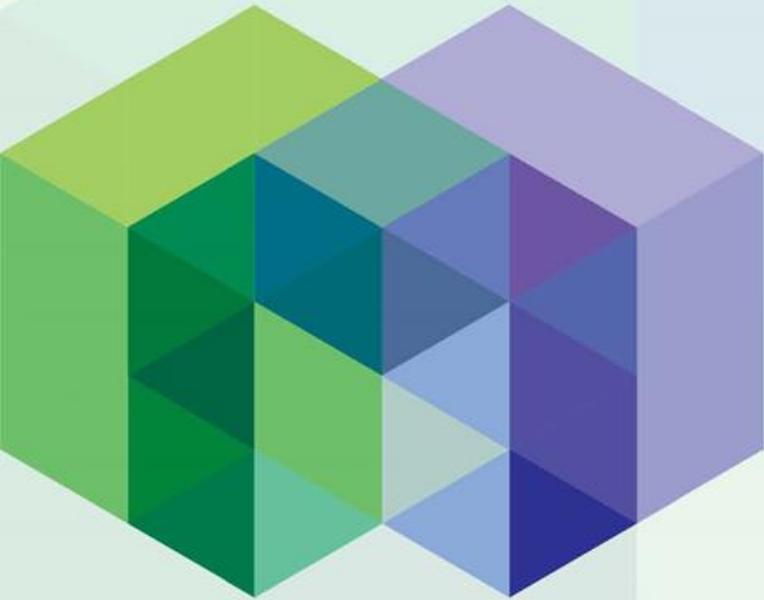
5. Why?



A simple tool to drive at root cause

# This System Safety framework that has been developed supports many drivers of EHS Improvement





# Practical Examples of Leveraging Technology

- **Near Miss & Incident Reporting**
- **Automated Life Safety Permitting**
- **Contractor Management**



# Near Miss and Incident Reporting

# Summary of Near Miss and Incident Reporting System

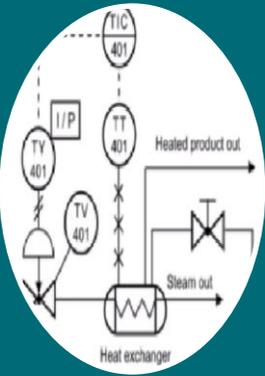
- Catalyst of change of EHS Culture at the plant by using a systematic methodology to determine the problem statement, identify causal factors and to propose solutions
- Single platform technology allows for real time tracking of hazard observations, near misses and incidents which allows for appropriate corrective actions including root cause analysis to mitigate hazards in the workplace
- Increased awareness and visibility of hazards in the workplace
- Allows to develop meaningful metrics to track EHS performance
- Allows decisions to be based on data



# Automated Life Safety Permit Program



Safe Work



ECPs



LOTO



Line  
Breaking



Hot Work



Confined  
Space  
Entry



Elevated  
Work



Excavation  
&  
Demolition

## The Spectrum of Life Safety Permits

# Summary of Automated Life Safety Permit Program

- Streamlining of permit process through reduction in manual & repetitive writing.
- Systematic safeguards to ensure regulatory compliance prior to work beginning.
- Real time awareness of activities resulting in enhanced auditing and response capabilities.
- Mobile technology allows in field hazard reviews and allows for hands-on physical confirmation of isolation points for LOTO.
- Enterprise wide workflow breaks down siloing, deters normalization of deviation, and encourages best practice sharing and interdepartmental support.
- Allows decisions to be based on data.



# Contractor Pre-Qualification and HAZCOM

# Summary of Contractor Pre-Qualification and HAZCOM System

- **Electronic platform allows for enhanced compliance with OSHA 1910.119(h) Process Safety Management for Contractors**
- **System allows for prevention through design by restricting employers and employees who don't satisfy minimum prequalification requirements to perform work on site.**
- **System allows for trending and archiving information, allows for real time tracking of employee competency on a variety of EHS Related topics**
- **Mobile app has added benefit of conducting in-field status checks**
- **Encourages collaboration between a variety of stakeholder groups such as EHS, Legal, Risk Management, HR and Project Engineering**

# Leveraging Technology to Manage EHS Systems

## Summary

- **Data driven decision making through metric analysis and Root Cause Analysis are vital to keep safety systems on target.**
- **Application of engineering and management principles will drive EHS success through streamlined processes and predictable outcomes.**
- **Adoption of Lean Business tools and philosophies are key to maintaining the cycle of Continuous Improvement.**
- **All safety systems are a work in progress and can always be improved.**
- **EHS Data is only as good as the people and processes.**

# Questions, Comments, and Discussion

Thank you