



Achieving Zero Accidents in Construction Industry of Pakistan

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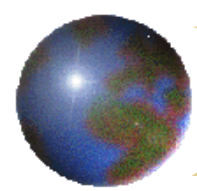


**EVERY YEAR ROUGHLY 60,000 PEOPLE ARE
KILLED ON CONSTRUCTION SITES**

Agenda

- Construction Safety **Statistics and Scenario**
- **Achieving Zero Accidents in Pakistani construction Industry**
- **Emerging Trends in Construction Safety**

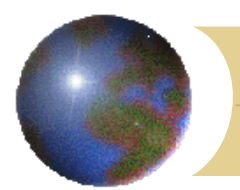




Achieving Zero Accidents

Hazrat Mohammad (S.W) said: “Refrain from staying up late after the night has become quiet, for you do not know what creatures God sends around. Secure your doors, tighten your drinking water containers, cover your saucepans and put out your lights.”

(Related by Al-Bukhari in Al-Adab Al-Mufrad and Ahmad).



What does Zero Accidents really mean?

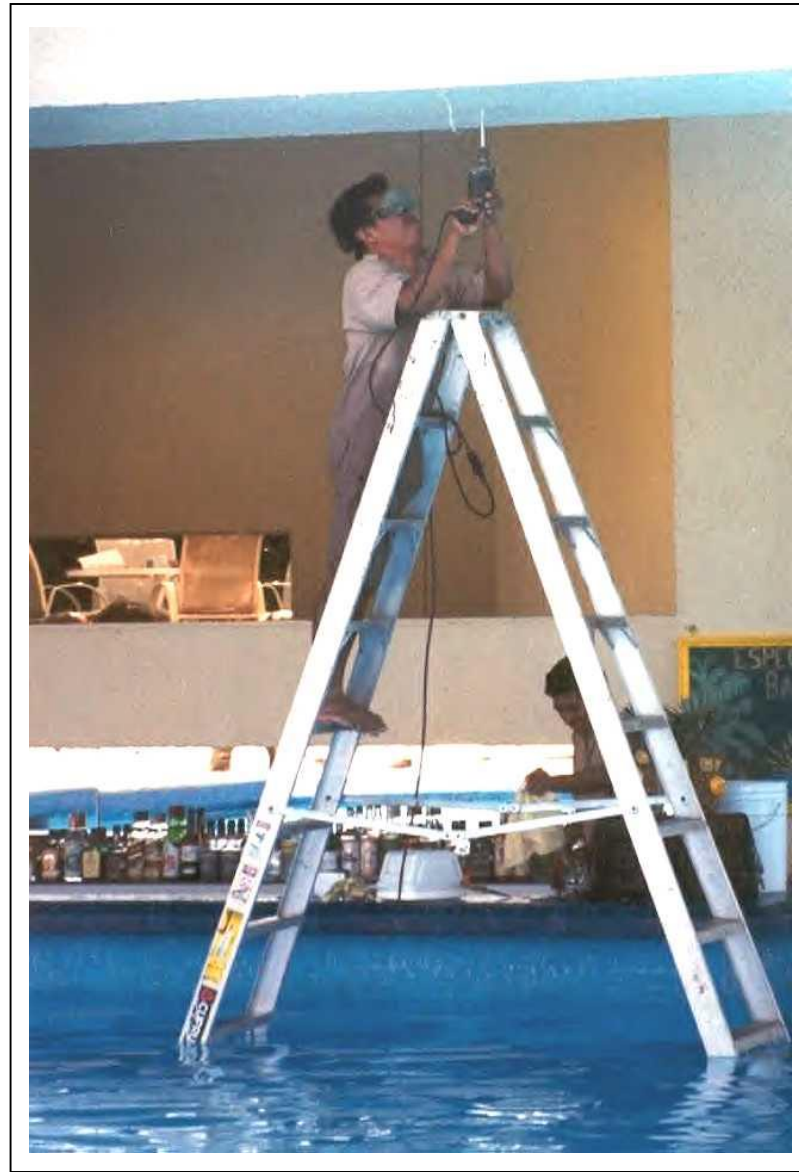
“Making decisions at every level in the project by all stakeholders that result in actions consistent with our values regarding the protection of life.”



**CONSTRUCTION SAFETY –
STATISTICS AND SCENARIO**

Common Accident Scenarios in Construction

- ❖ Fall of person from height
- ❖ Contact with electricity
- ❖ Trapped by collapsing or overturning object
- ❖ Trench excavation cave-ins
- ❖ Struck by moving or falling object
- ❖ Accidental release of objects from the cranes
- ❖ Contact with moving machinery or object being machined
- ❖ Caught in between equipment
- ❖ Exposure to fire
- ❖ Exposure to Hazardous Material
- ❖ Fall of passenger hoist or appliance carrying persons.











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Global OSH Scenario – All Industries

- Each year work-related injuries and diseases kill an estimated **1.1 million people worldwide**
- This figure includes about **300,000 fatalities from 250 million accidents** that happen in the workplace annually.

Competitiveness and Safety

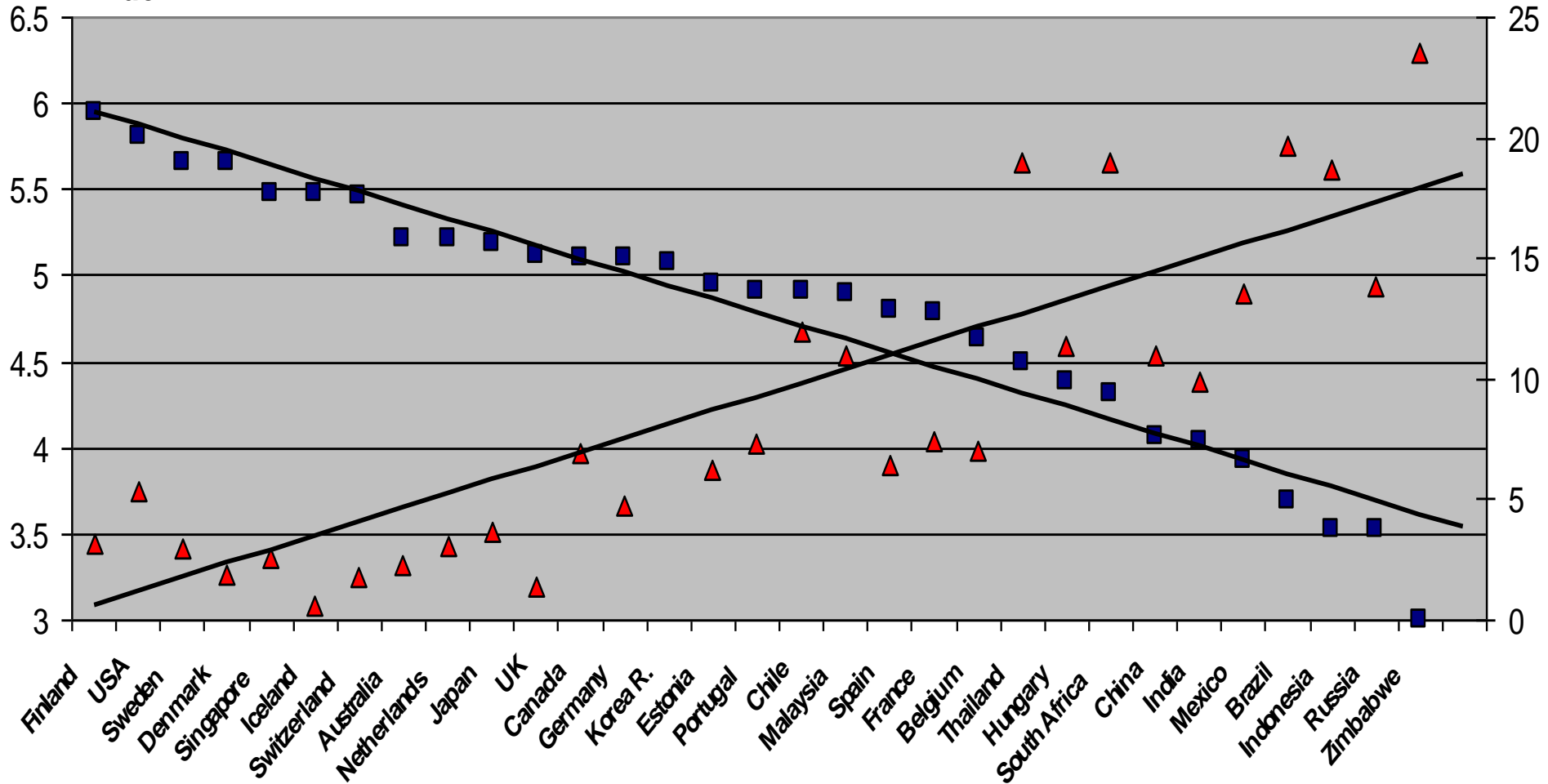
Sources: World Economic Forum;
ILO/SafeWork

■ Competitiveness, left scale

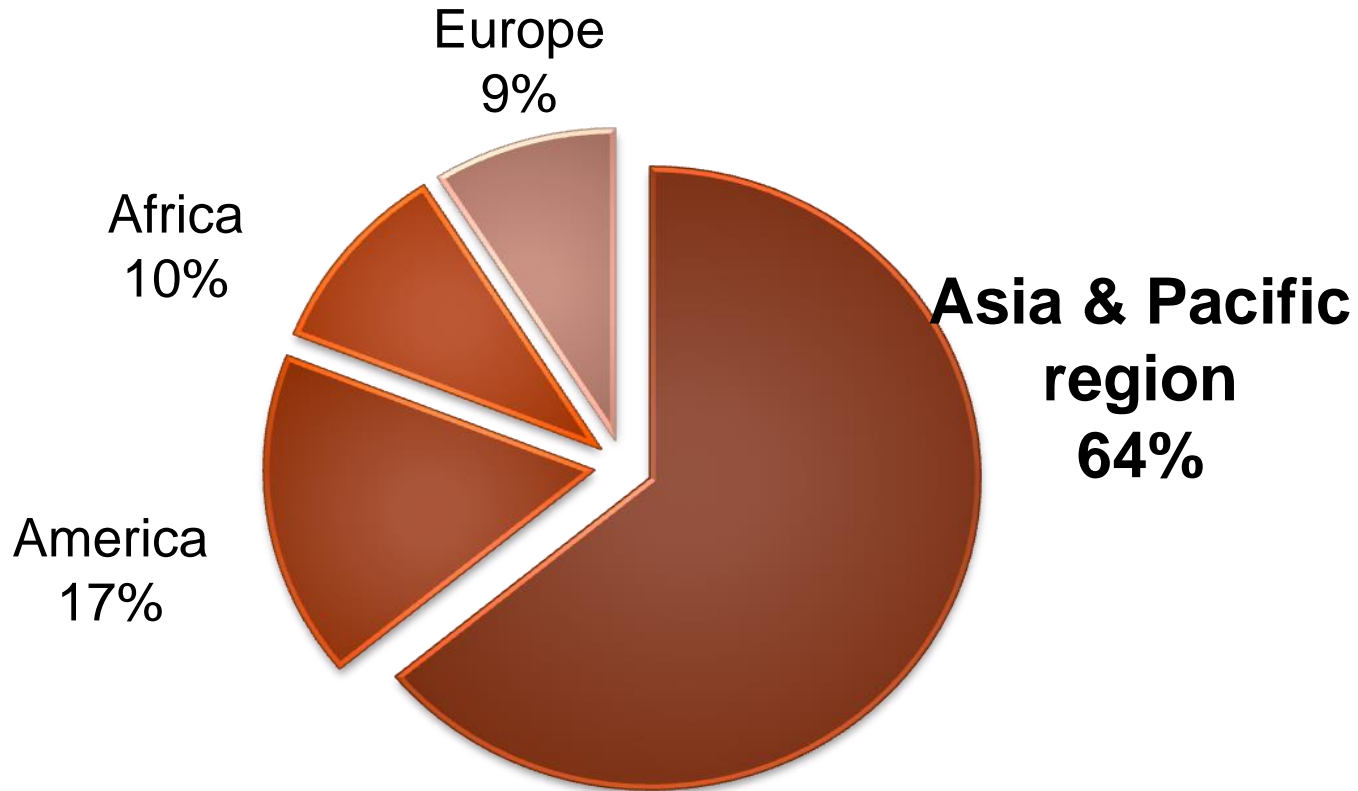
▲ Deaths, right scale

Fatal accidents/100 000 workers

Competitiveness
Index



Global OSH Scenario – Construction



- Approx. 60% of fatal accidents are the result of decisions made **before execution**.

OSH Trend Analysis – Pakistan (2010-2015)

Sector	Sectoral Share in Employment (%)	Sectoral Share in GDP (%)	Sectoral Share in Total Injuries/ Diseases (%)	Incidence of Occupational Injuries/ Diseases by Sector (%)
Agriculture/Forestry & Fishing	42.28	20.88	47.95	4.54
Mining & Quarrying	0.16	2.92	0.27	6.84
Manufacturing	15.34	13.27	15.90	4.15
Electricity & Gas	0.40	1.67	0.32	3.14
Construction	7.31	2.44	16.27	8.90
Wholesale & Trade	14.64	18.26	7.07	1.93
Transport, Storage & Information & Communication	5.40	13.36	7.57	5.60
Financial & Insurance	0.59	3.14	0.09	0.64
Others	13.89	24.06	4.55	1.31



Not proper scaffolding, guard rails, and use of fall protection - personal protective equipment, workers at increased risk



A worker is working above 40 feet without safety helmet and safety lifeline



Unsafe: Note that the person fixing the steel bars was not wearing any safety belt or helmet.



Unsafe: Note that the persons pouring the concrete in column, are working in an unsafe environment



The worker is about to start work at temporary scaffolding at a height without wearing any PPE



Working at height without wearing Safety Helmet, Safety Harness and Safety Shoes and on unsafe Scaffold platform



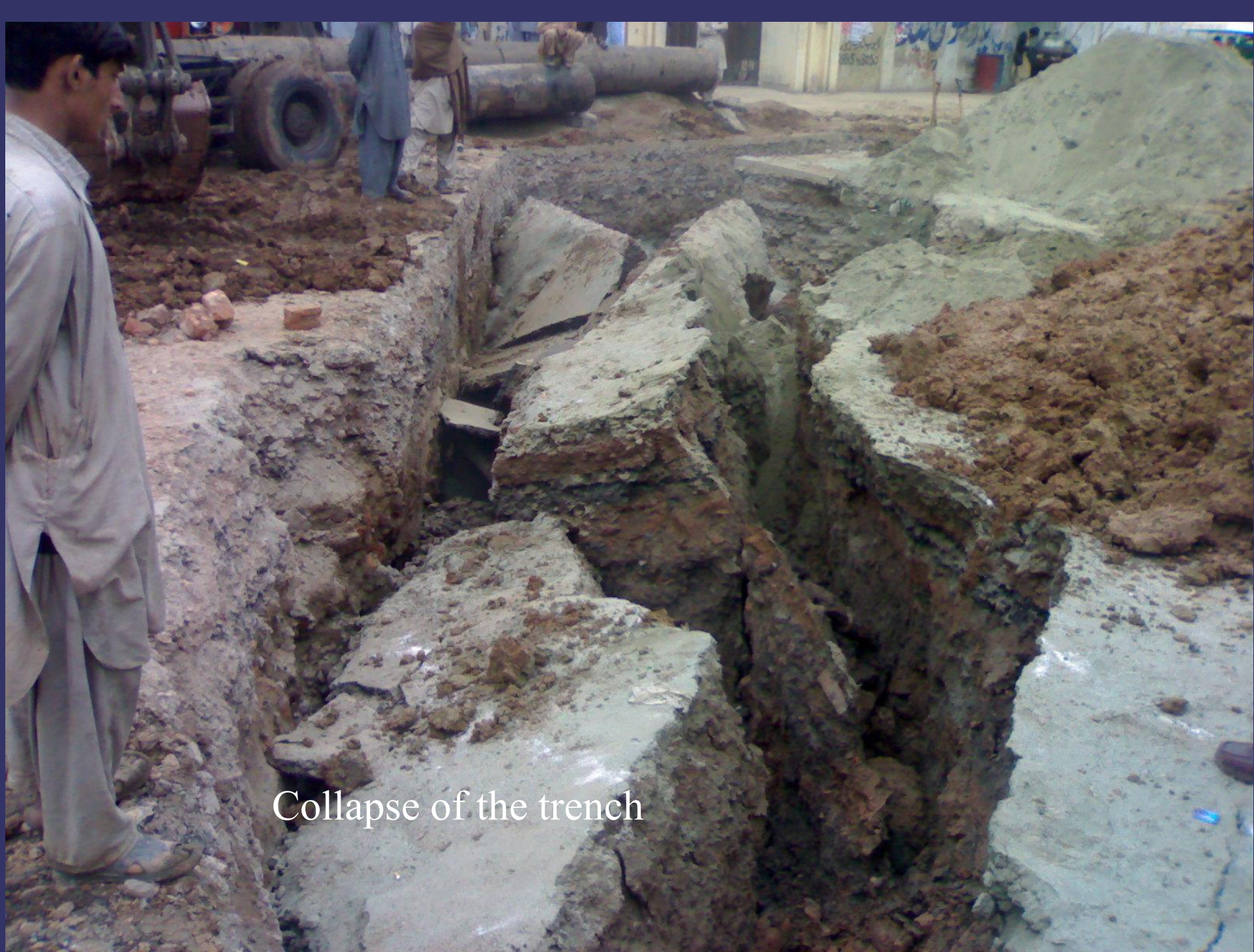
Unsafe: No safety helmet and harness at height

Unsafe: not wearing safety shoes and not using safety harness at height





10 ft deep trench without any bracing.

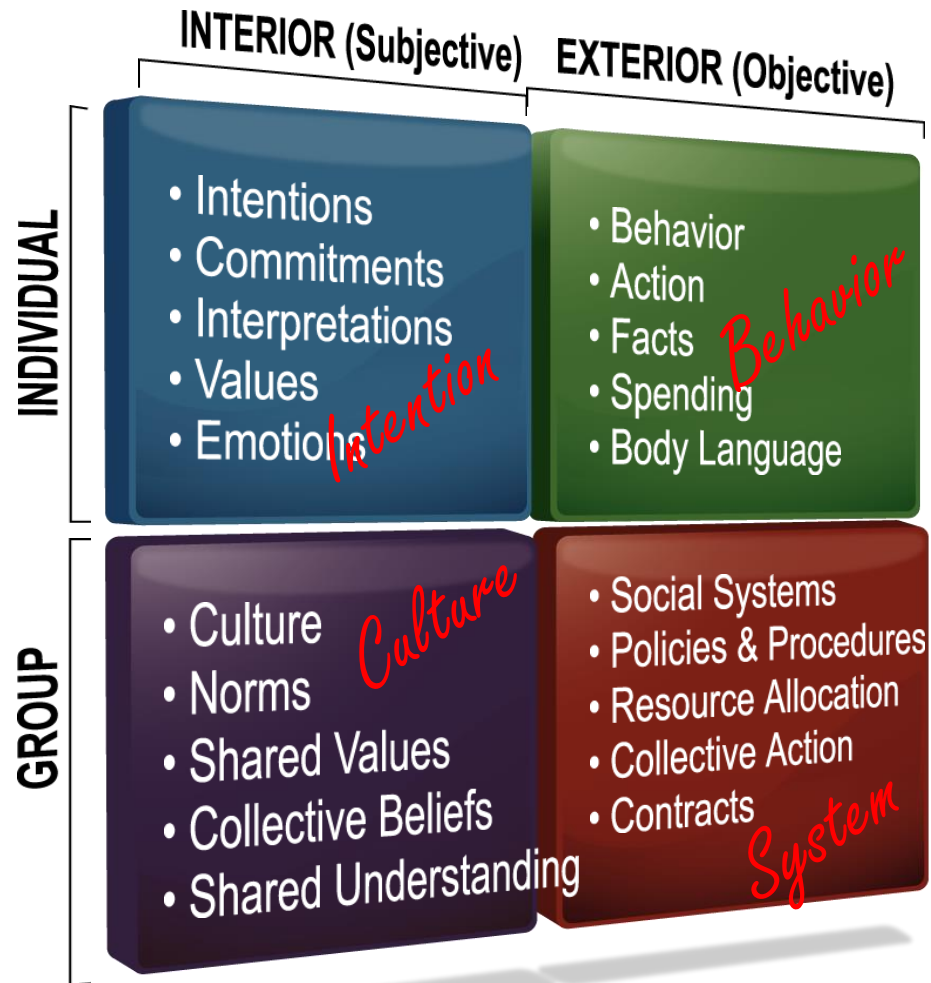


Collapse of the trench



**ACHIEVING ZERO
ACCIDENTS IN PAKISTANI
CONSTRUCTION INDUSTRY**

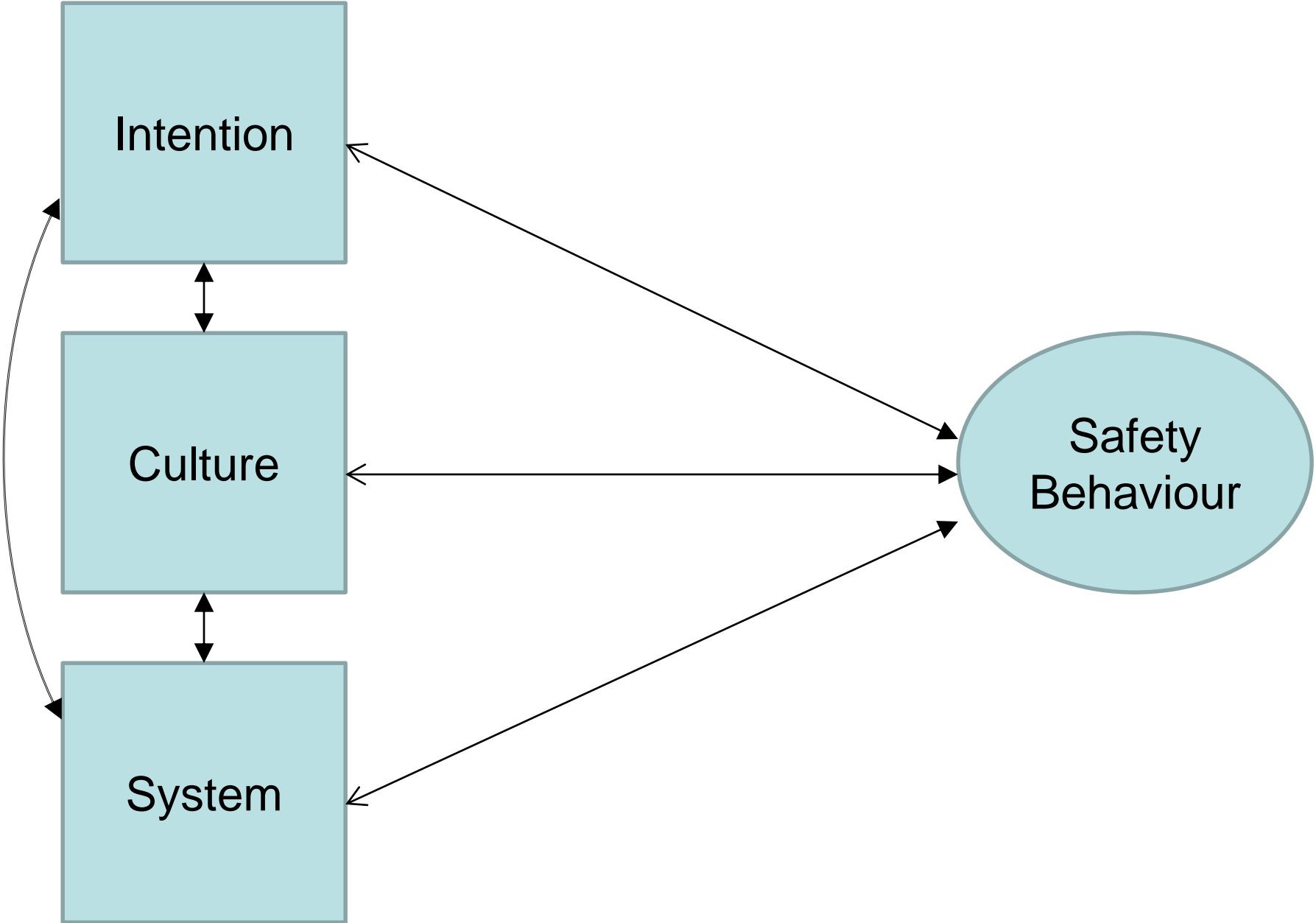
An Integral Model of Zero Accidents



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* The Integral Model is based on the work of Ken Wilber

An Integral Approach to Zero Accidents

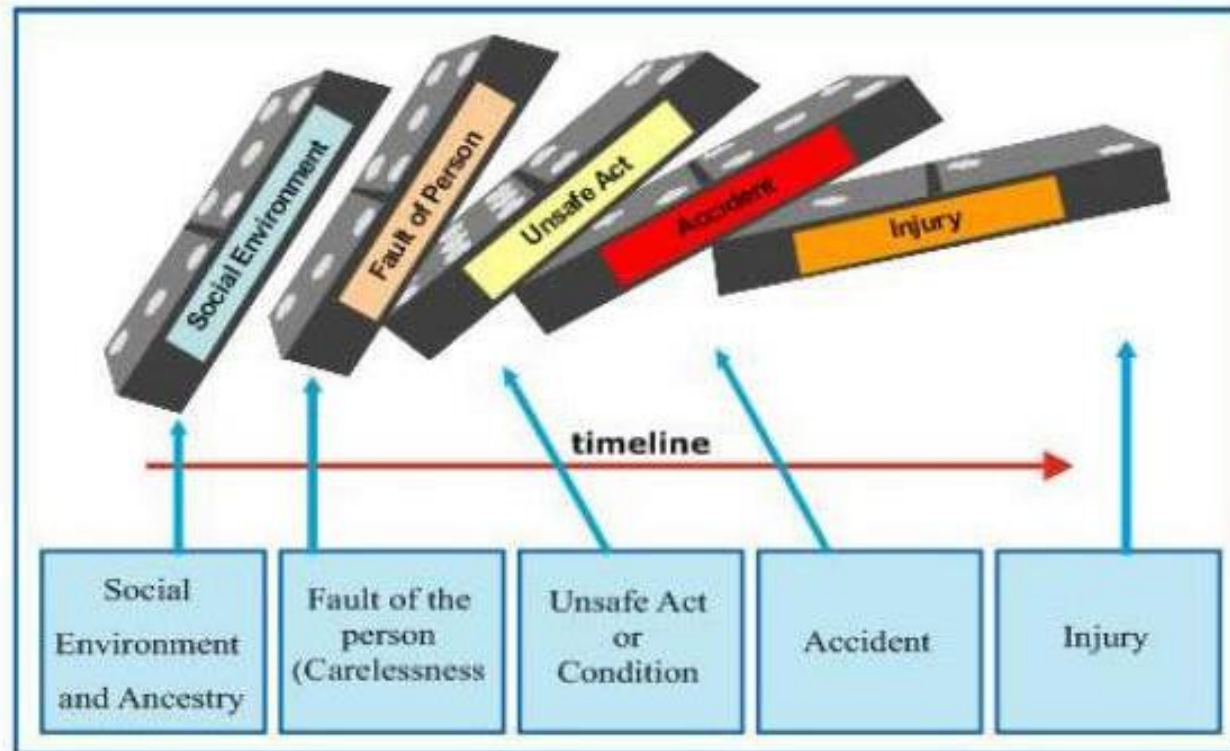


Why Pakistani Construction Industry is NOT Safe?

Top 10 Safety Barriers	Domain
Absence of safety regulatory framework in the industry	System
Absence of Safety Enforcement Entity (like OSHA in USA)	System
Lack of liability/ accountability for safety non-implementation/ accident	System
Insufficient and incentive-less insurance mechanisms	System
Lowest price business environment	Culture
Worker Perception and Attitude towards Safety	Intention
Management/ Employer and Supervisor Commitment to Safety	Intention
Lack of worker and supervisor safety awareness, knowledge and training	Culture
Project Level Safety Climate	Culture
Hazard Perception and Recognition	Intention

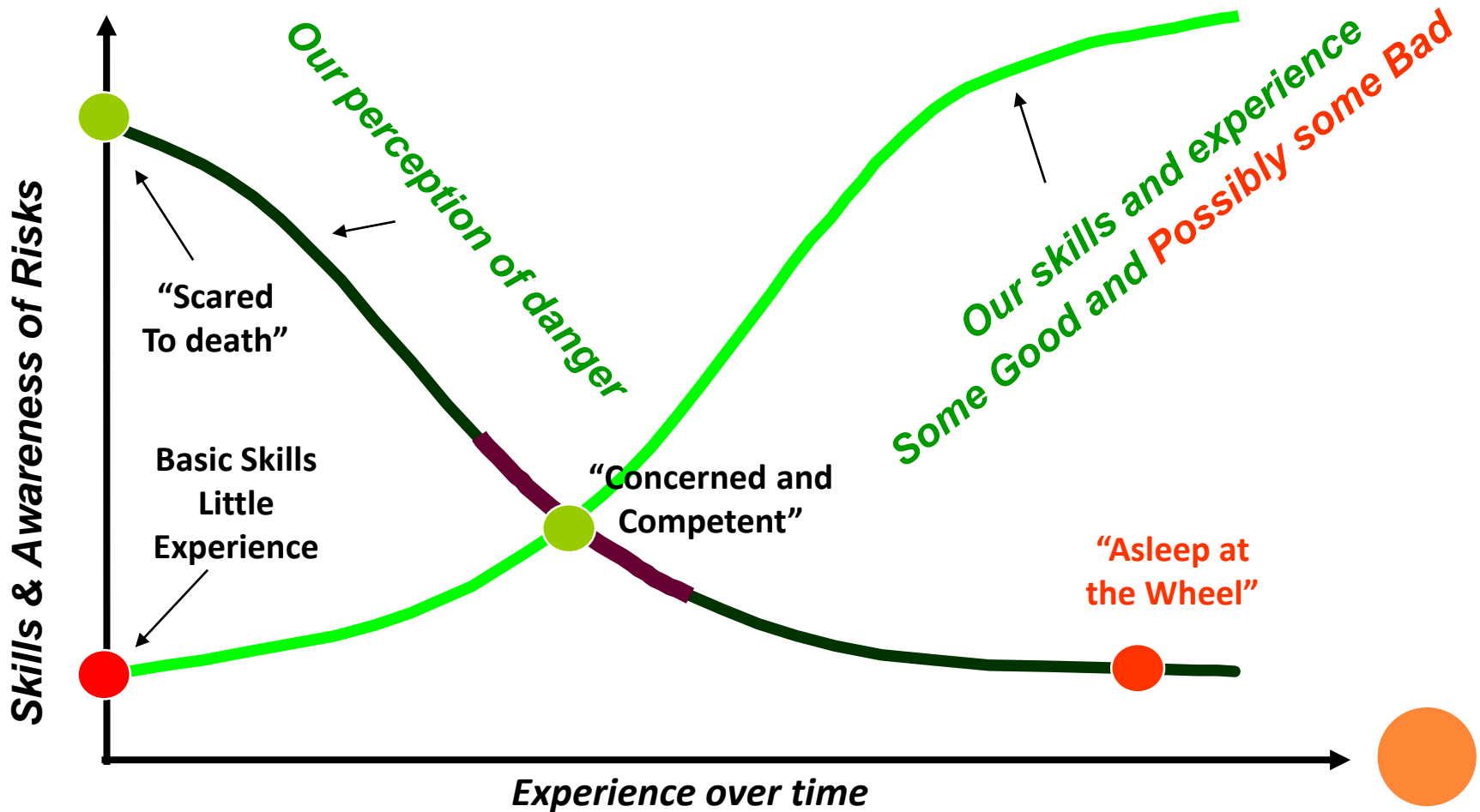
How Intention Influences Safety Behaviors?

Heinrich Domino Theory (1930) (Teori Domino)

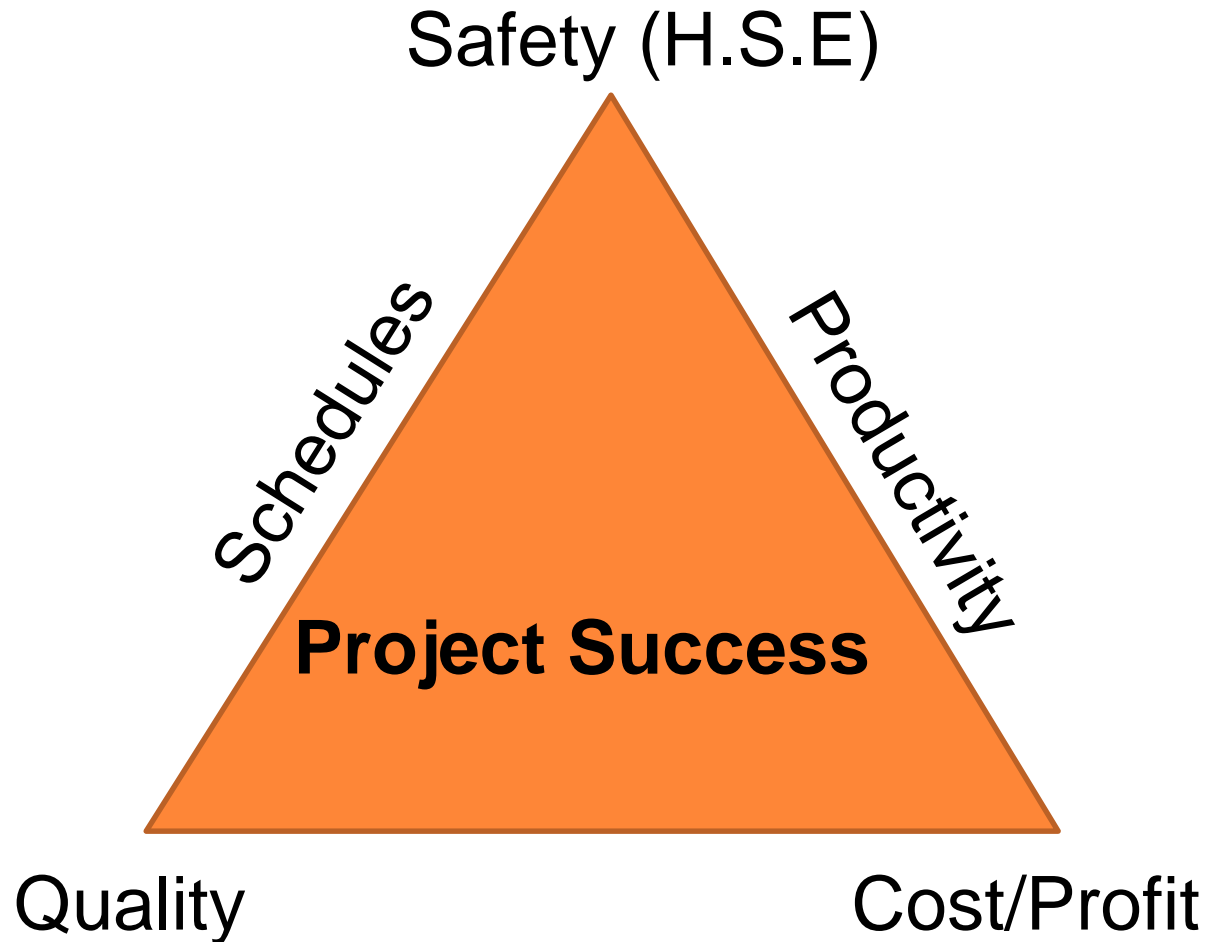


Heinrich analyzed a large number of accidents and determined that **88% were due to unsafe acts and not flaws in systems.**

HOW INTENTION INFLUENCES SAFETY BEHAVIORS?



HOW PRESSURES AFFECT SAFETY?

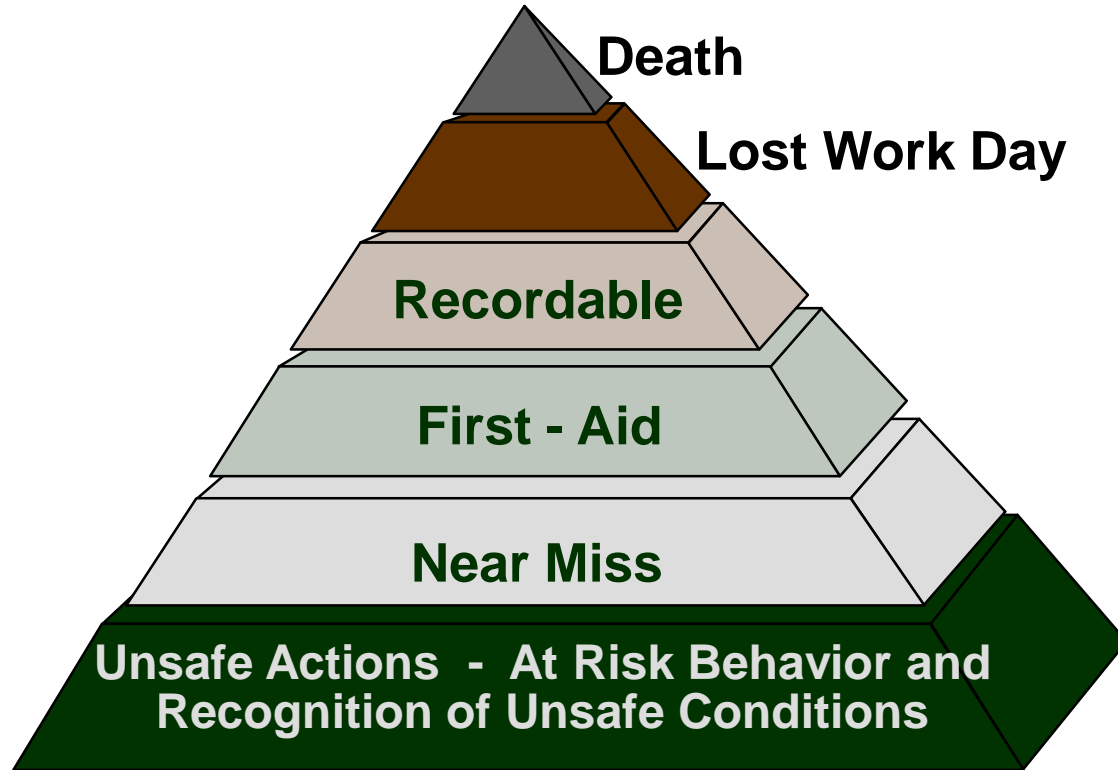


INTENTIONS...CULTURE...SYSTEM → BEHAVIORS



Value of life

The Injury Pyramid



When we look at **severity**, there is a huge difference between the consequences of a near miss and of a fatality.

When we look at **cause**, many times there is little or no difference. Zero Accidents requires working at the lowest level of the pyramid.



LEARNING FROM INTERNATIONAL EXPERIENCE

- Regulations & Enforcement
- Safety Trainings, Meetings, Procedures
- Citations/ Criminal Penalties
- Incentives – EMRs
- **Focus on Hazards and not Accidents**
- **Perception Improvement**

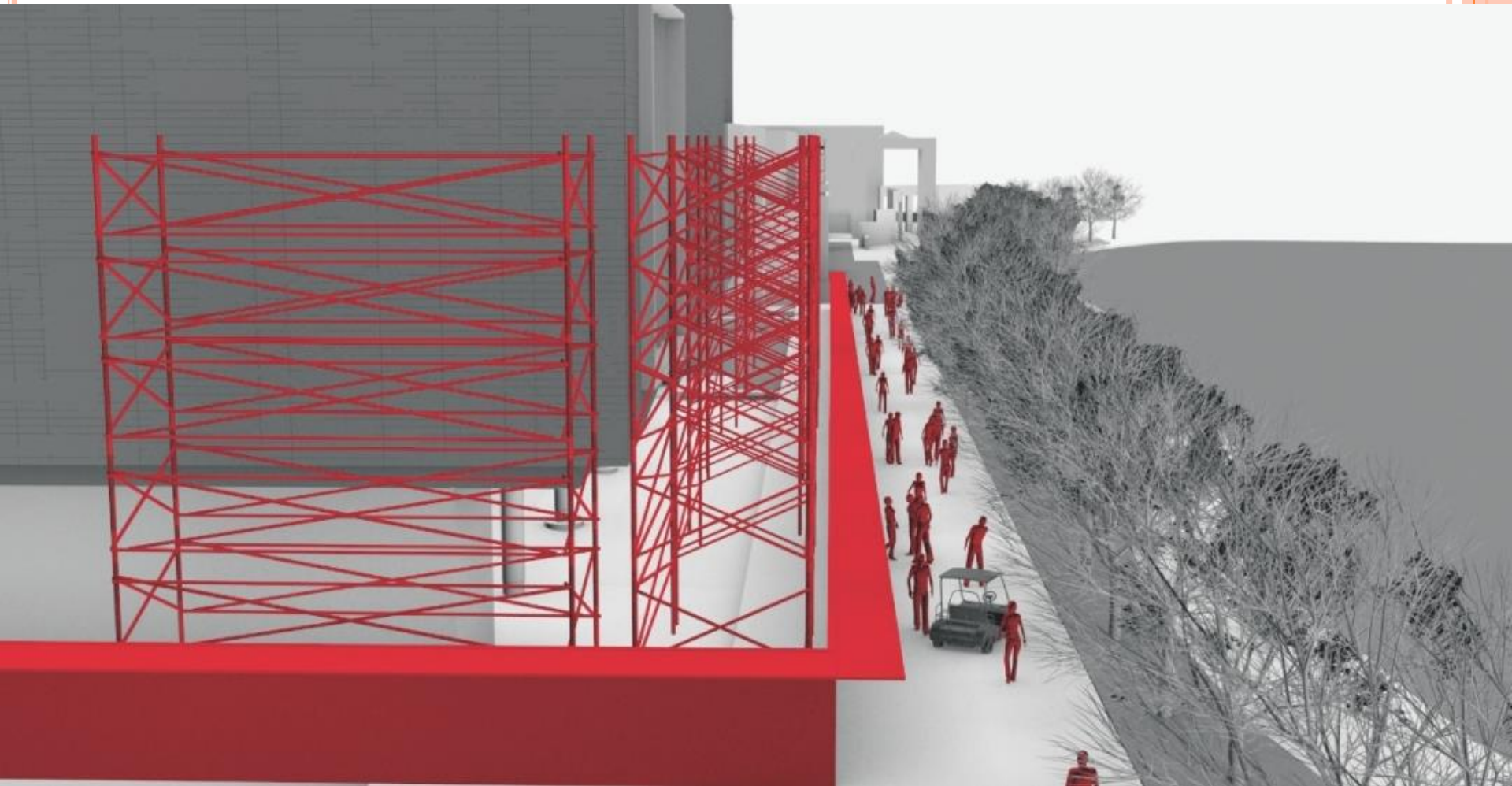
...Technology can Help



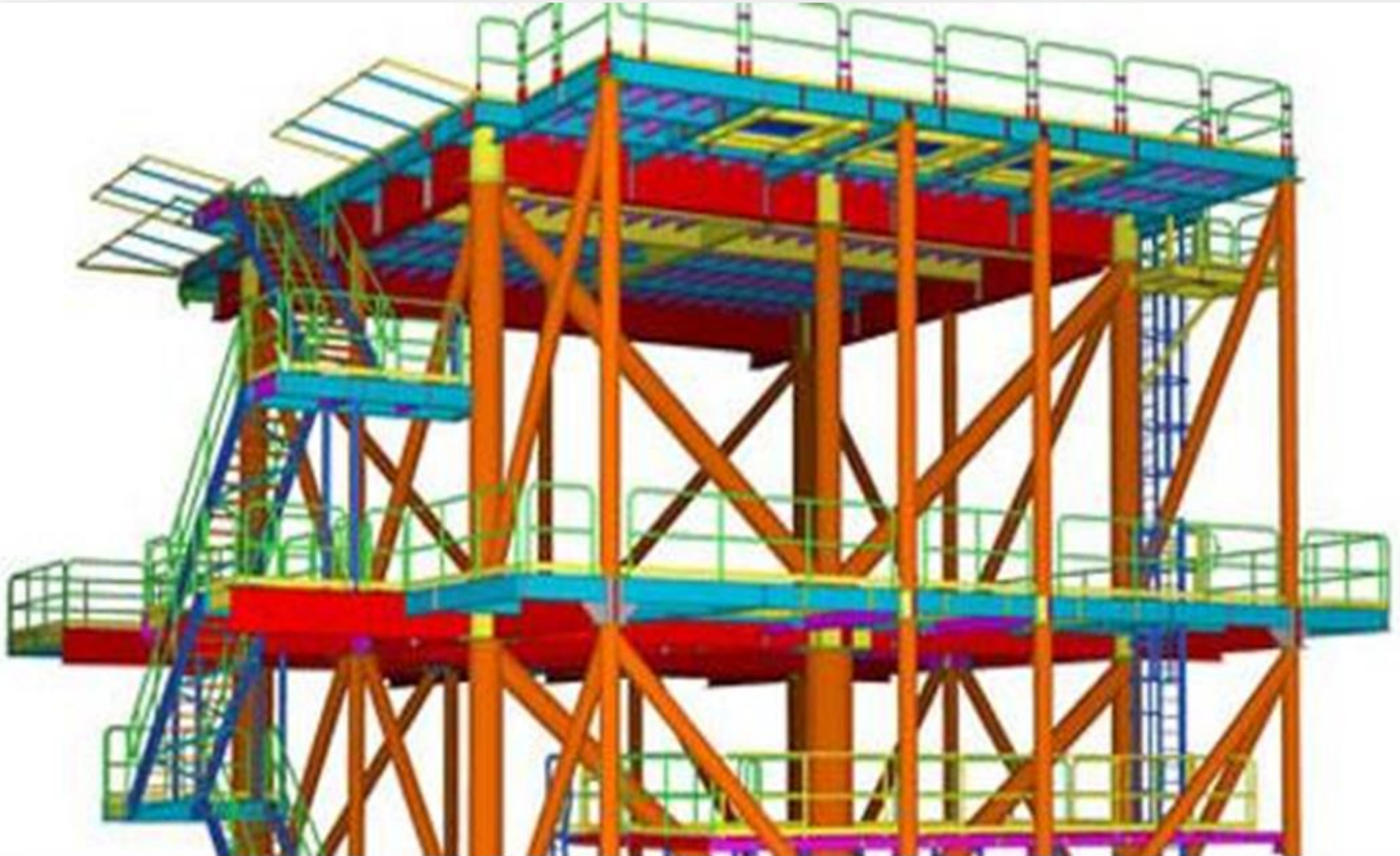


**EMERGING STRATEGIES
FOR WORKER SAFETY
IMPROVEMENT**

4D Simulation to Visualize Planned Work Areas near Public Thoroughfares



Design for Safety



Crane Path Model

Scaffolding Model

Fire Extinguishers Model

Excavation Safety Model

Emergency Response Plan





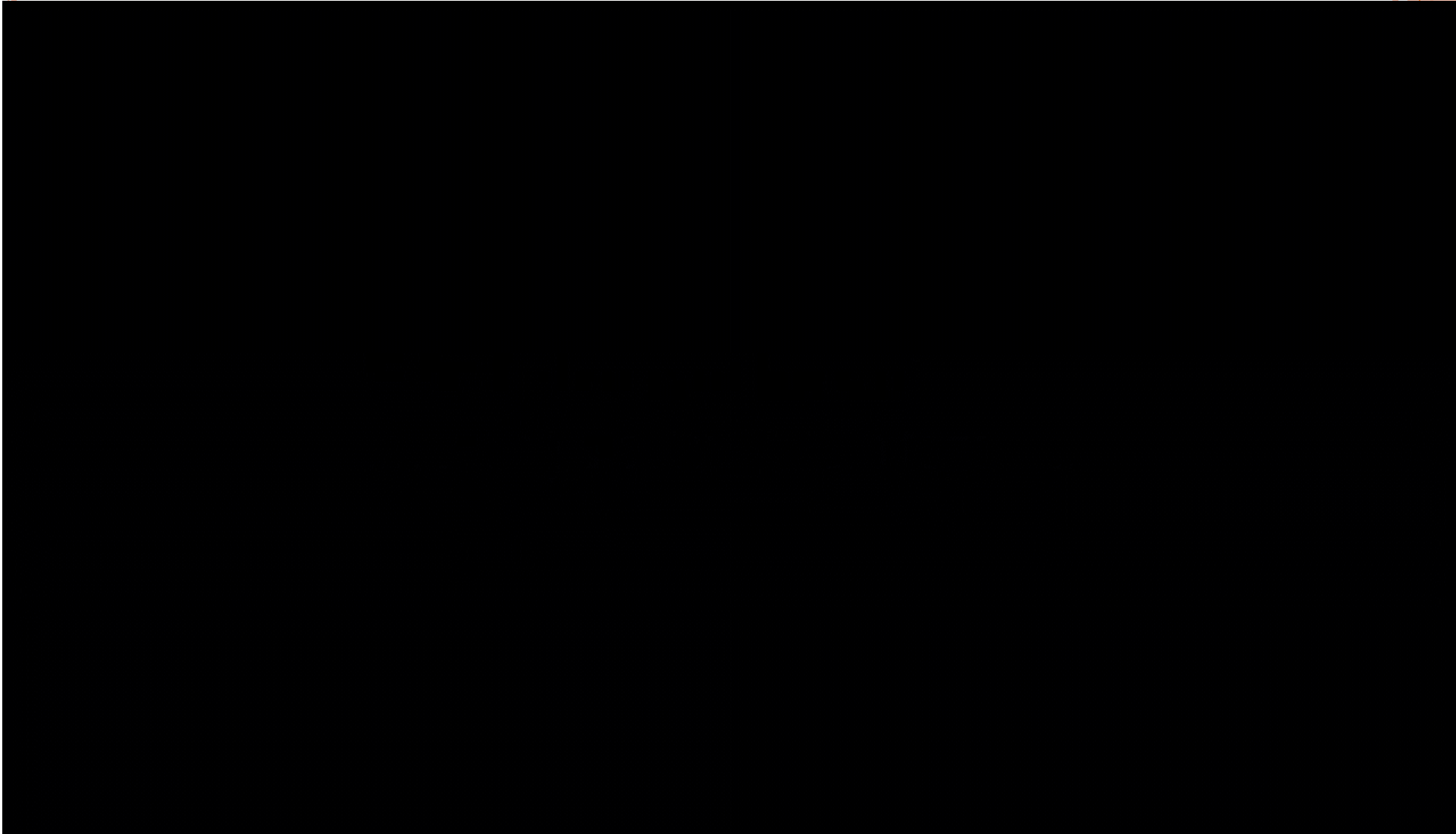
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solutions



VR for construction safety training



Construction Inspection using VR & AR



PRE-JOB HIGH ENGAGEMENT SAFETY TRAINING PROGRAMS

- A worker centric program in which various potential hazards are detailed to the work crew prior to initiating work
- Training should encompass a high level of interaction between an expert facilitator and among workers.
- Feedback should be provided regarding performance in the field and during training to encourage improvement.






Hazard Recognition Performance



ALWAYS REMEMBER



They expect you to come home safely.
So do we.

Contact Info.....

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Any questions?

BE CAREFUL
THE BEST SAFETY DEVICE IS A CAREFUL WORKER, GET THE SAFETY HABIT

GOAL
ZERO ACCIDENTS

**HEALTH & SAFETY
COUNT ME IN.**

ZAP Zero Accident Philosophy