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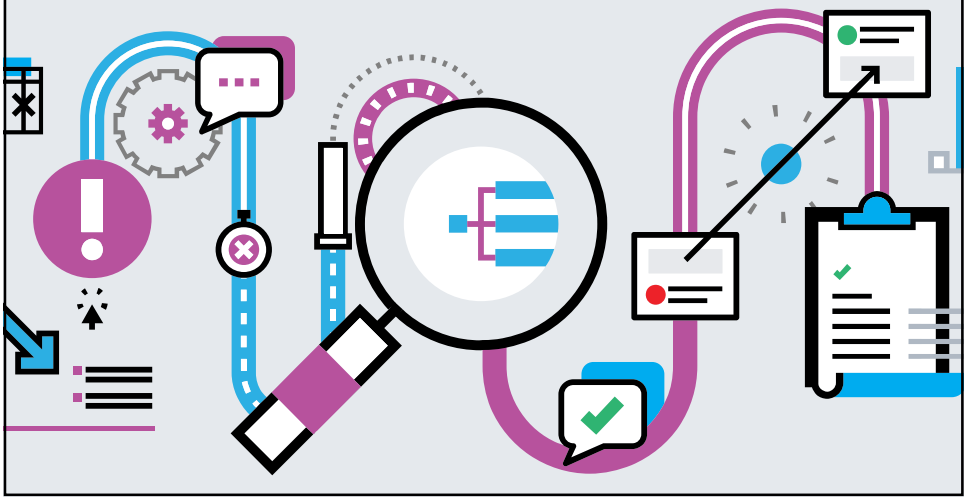
02 **Compare two investigation methodologies:**

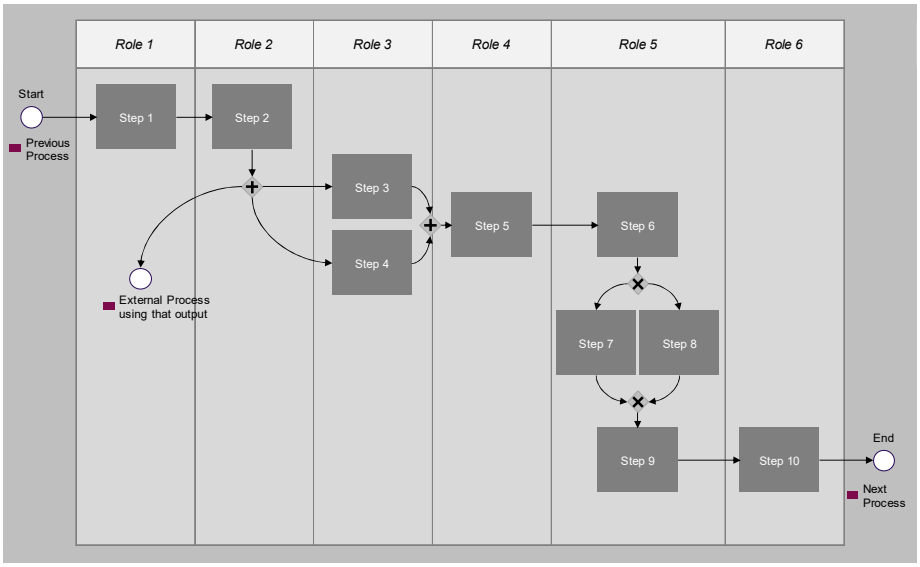
- Cause Mapping → "Cause Map"
- TapRooT → "SnapCharT"

Hargreaves | Access Services

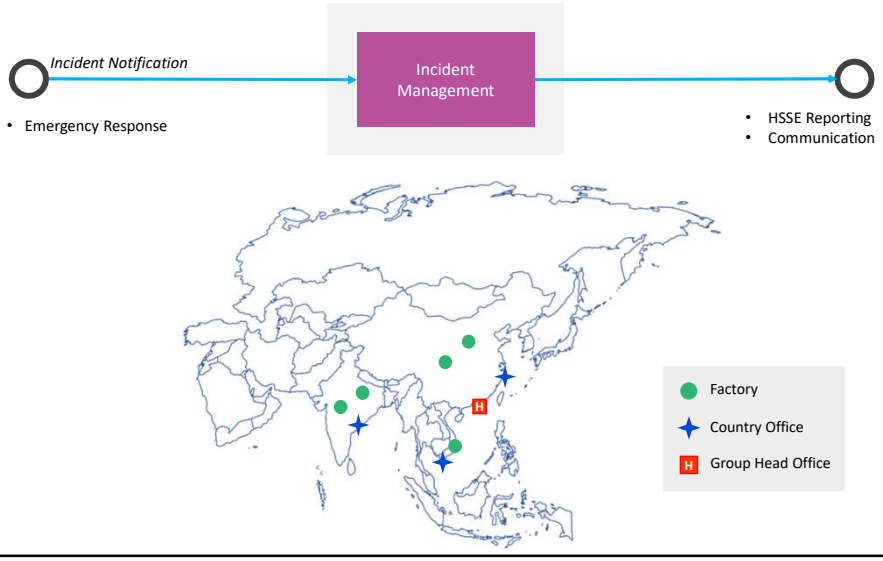
Process View



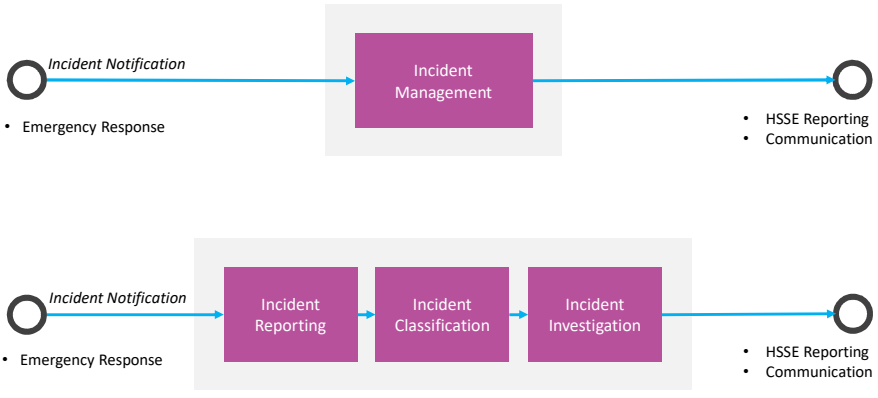
Process Views
(Business Process Modelling Notation)



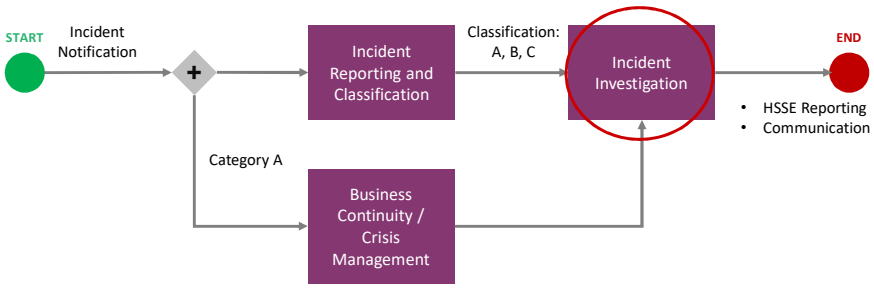
Incident Management Process



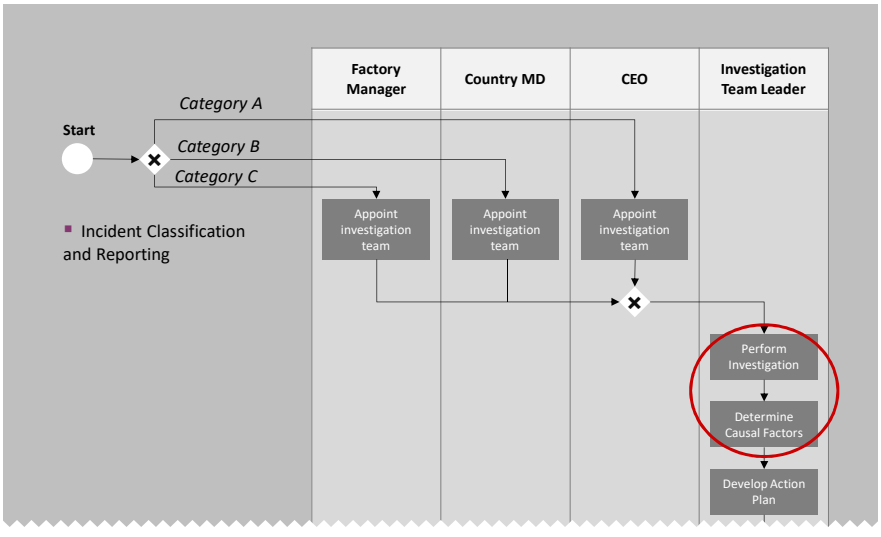
Incident Management Process



Incident Management Process

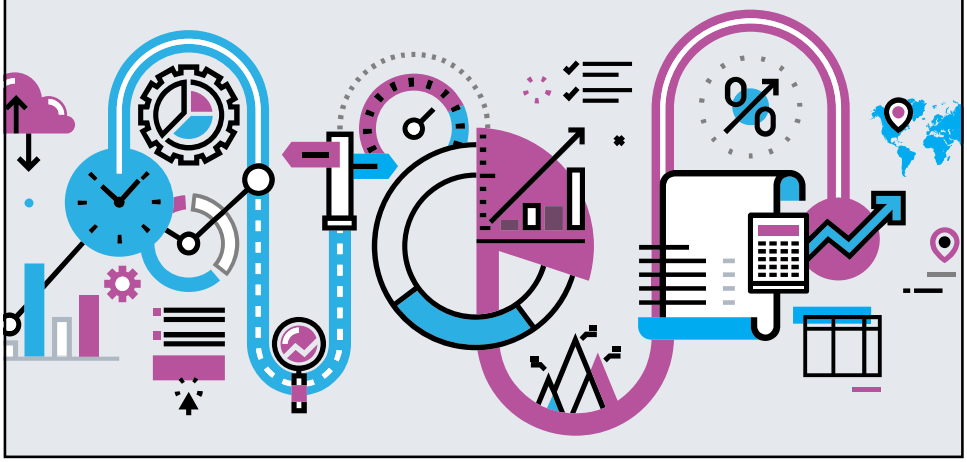


Incident Investigation Process



Methodologies

You have to understand *what* happened before you can understand *why* it happened

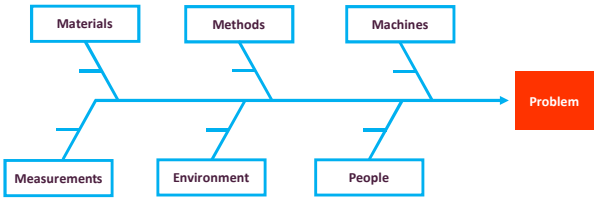


Why do we need a methodology

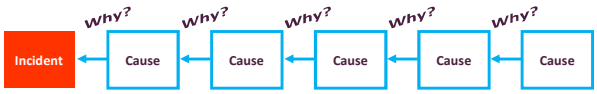
- Determines the causes of an incident
- Uses problem solving tools to help with the analysis
- May reduce “investigator bias”
- Enables people to be held accountable. Doesn’t focus on blame
- Doesn’t focus on the goal of finding “the one” root cause which caused the incident to happen

Familiar methodologies?

Ishikawa Fishbone Diagram

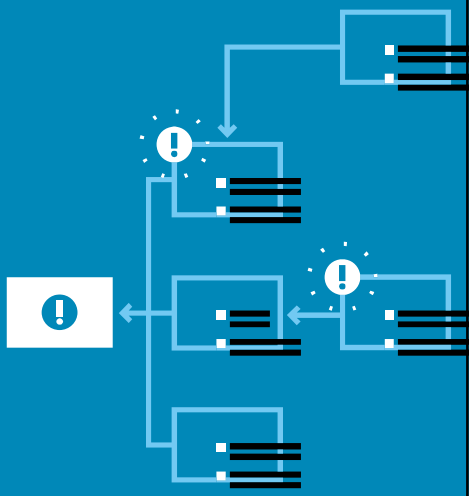


Toyota 5 Why



Cause Mapping
Kelvin TOP-SET
STEP
Fault Tree Analysis
Tripod Beta
TapRooT

Methodology 1: **Cause Mapping**



ThinkReliability: Cause Mapping

What's the Problem?

Step 1 Define

Goals Impacted

Why did it happen?

Step 2 Analyse

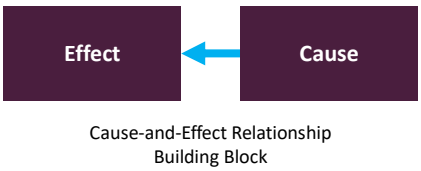
Causes

What will be done?

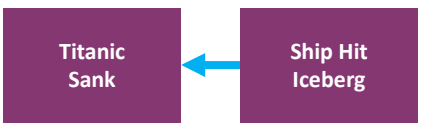
Step 3 Solve

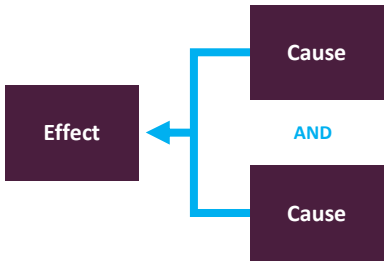
Solutions

ThinkReliability : Cause Mapping

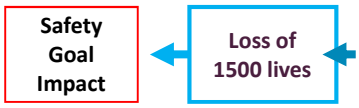


Cause-and-Effect Relationship
Building Block





Cause Mapping



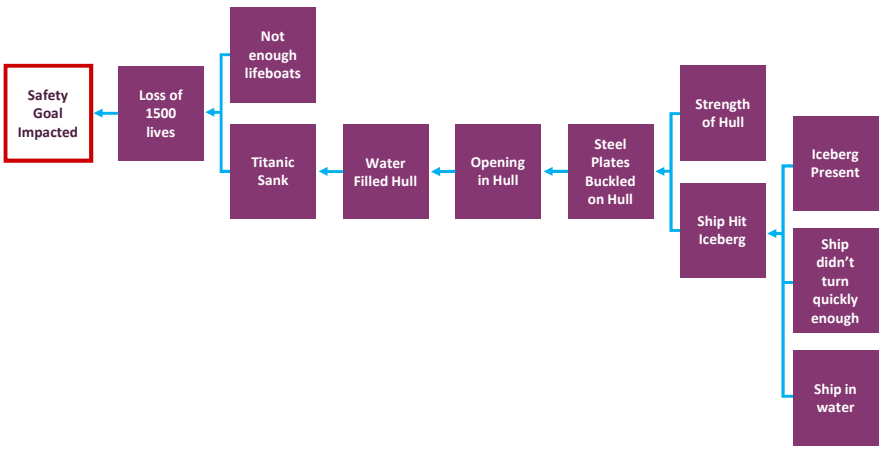
1 Problem Definition

What	Problem(s)	Titanic sank, ship hit iceberg, weak rivets
When	Date. Time	14th April 1912
Where	Physical Location	North Atlantic
	Process Location	Passengers UK to US

Impact to the Overall Goals

Safety	1500 Fatalities	
Vessel	Lost entire ship	$ 7,500,000
Business	Liabilities, business loss	$ 16,500.000
Frequency	1x	

Titanic Causal Tree



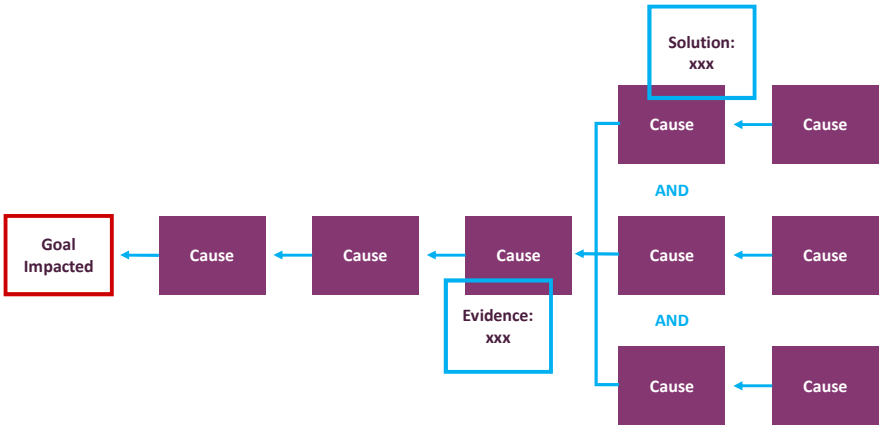
Example: Hotel Kitchen Accident

https://www.youtube.com/watch?v=MwCyVku1HvI

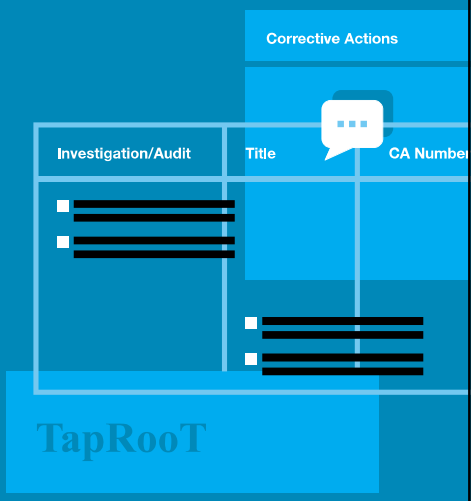
Problem Definition:

Safety	Cook Seriously Hurt through scalding (burn)	
Business Goal	Liabilities, Business Loss	**HKD$10,000,000**

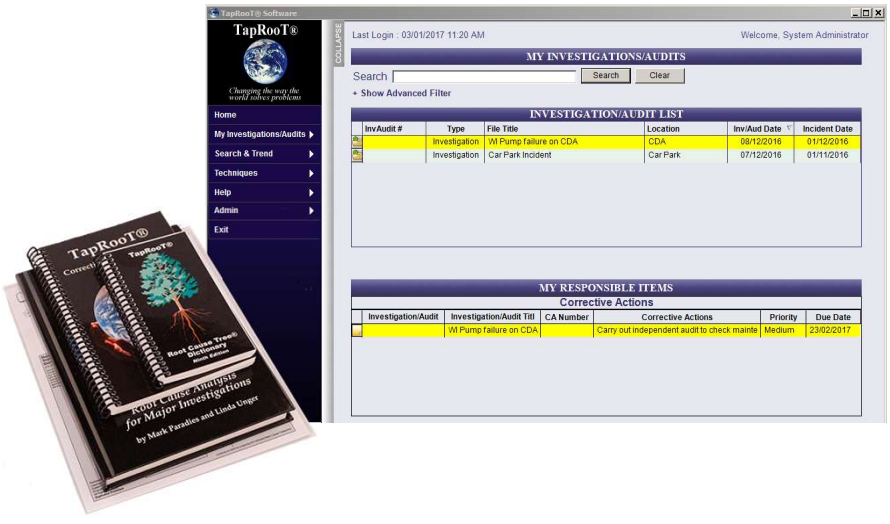
Summary: CauseMapping



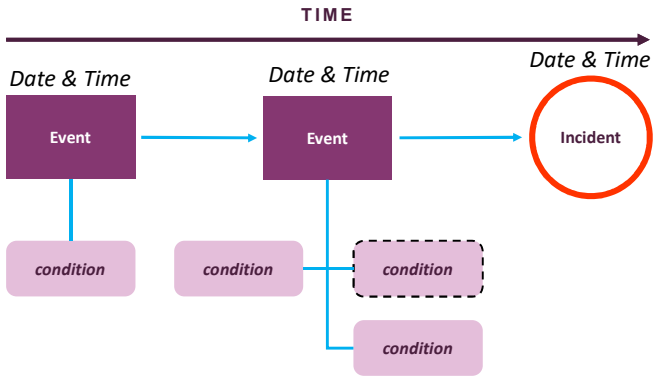
Methodology 2: **TapRooT**



Systems Improvements Inc: TapRooT®



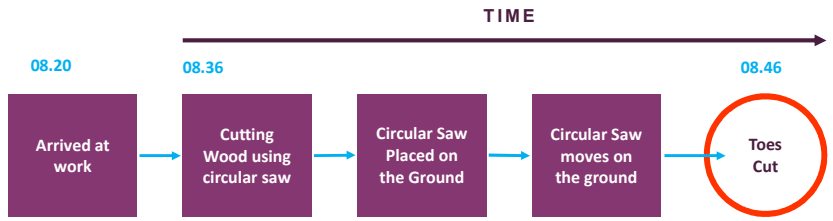
TapRooT



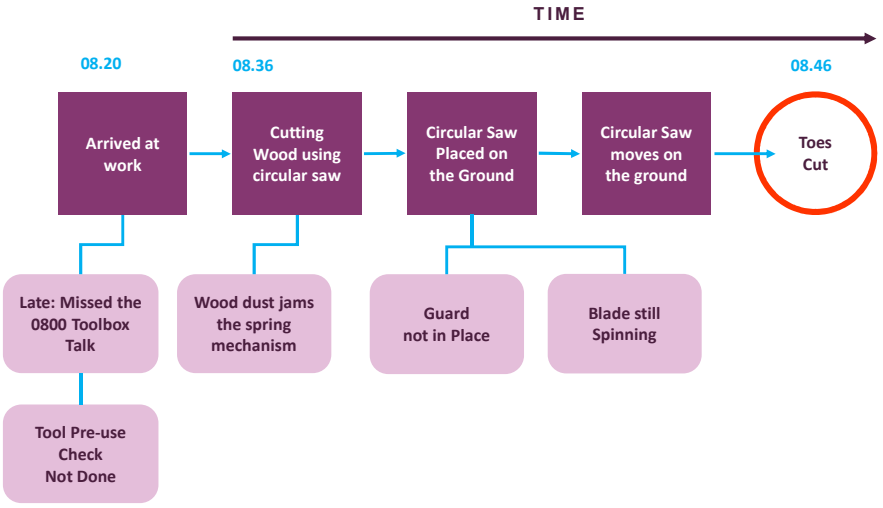
Example

https://www.youtube.com/watch?v=cxNboMk6Mhk

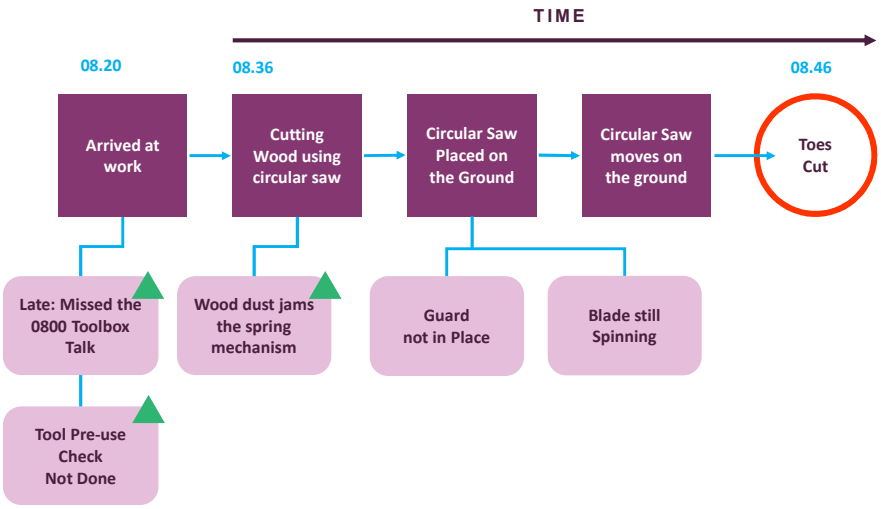
Wood Cutting Incident



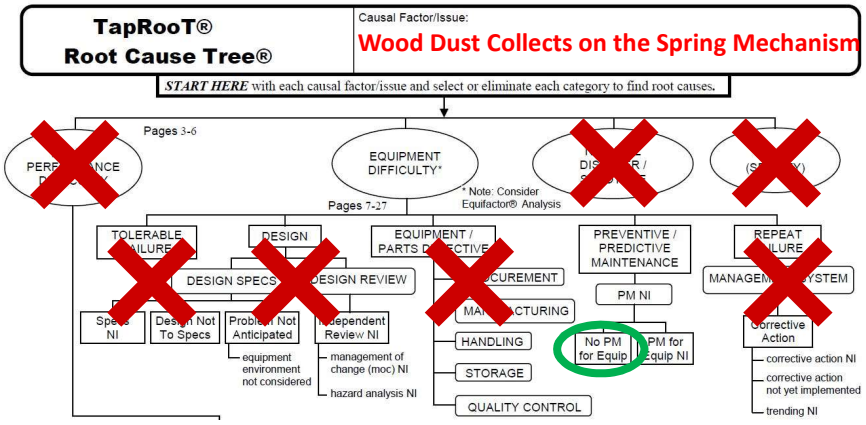
Wood Cutting Incident



Wood Cutting Incident

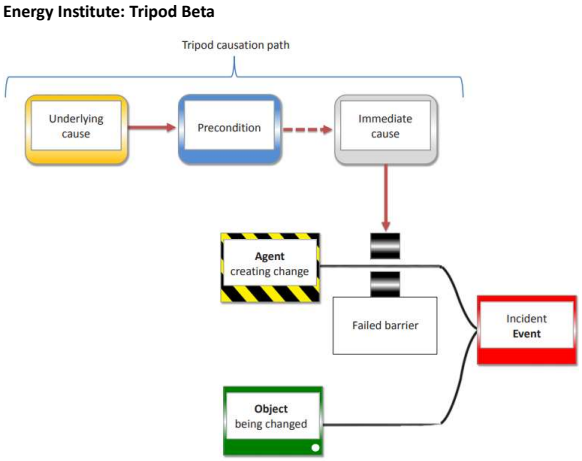


Analyse the Causal Factor

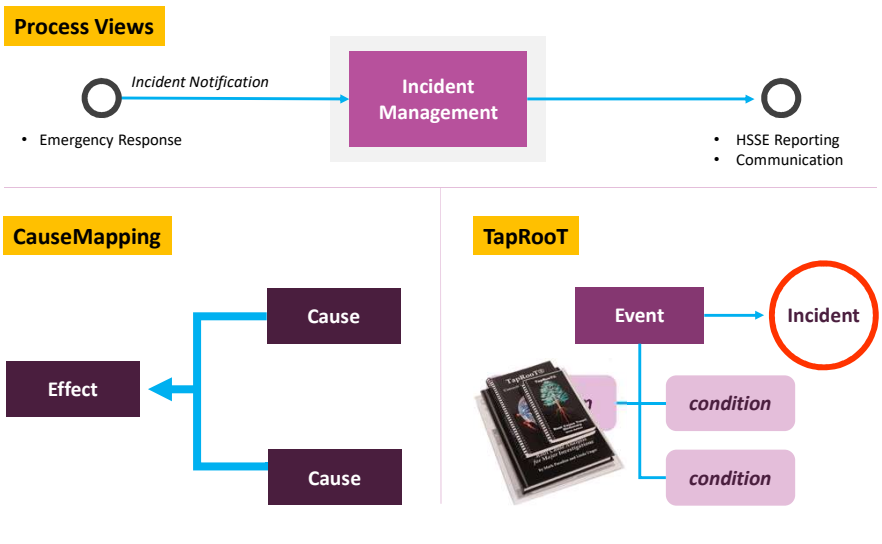


Considerations

- Complexity
- Training
- Industry Origins
- Client
- Software
- Safety Culture
- Cost



Recap



Case Study: Hawaii Missile Alert

South China Morning Post

Incoming missile attack alert that spread panic in Hawaii blamed on 'wrong button' being pushed

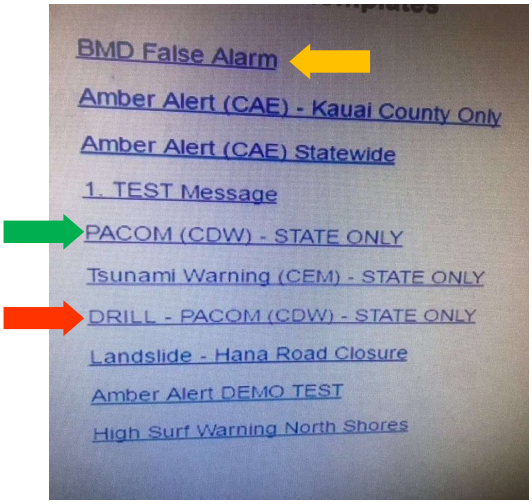
Incoming missile attack alert that spread panic in Hawaii blamed on 'wrong button' being pushed

The emergency notice was triggered after an employee pushed the wrong button during a shift change at the Hawaii Emergency Management Agency

Worksheet: Download Here

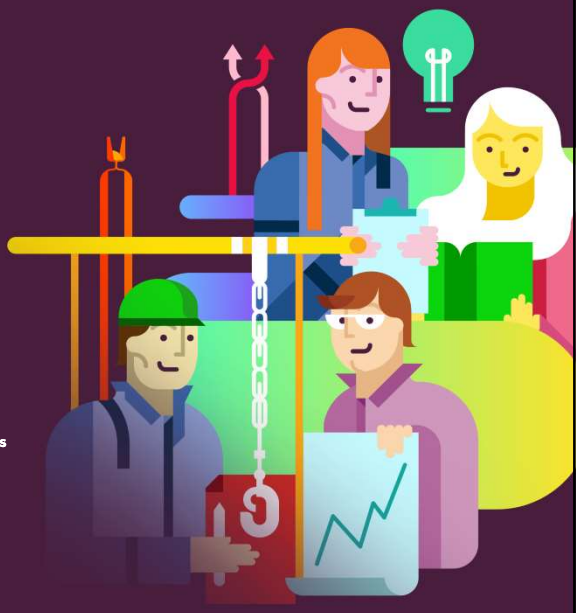
Was this human error, system design or work process failure?

Hawaii Missile Alert: 13 January 2018



Thank You

Contact:
neilvk@hotmail.co.uk



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