Ensuring the presence of safety

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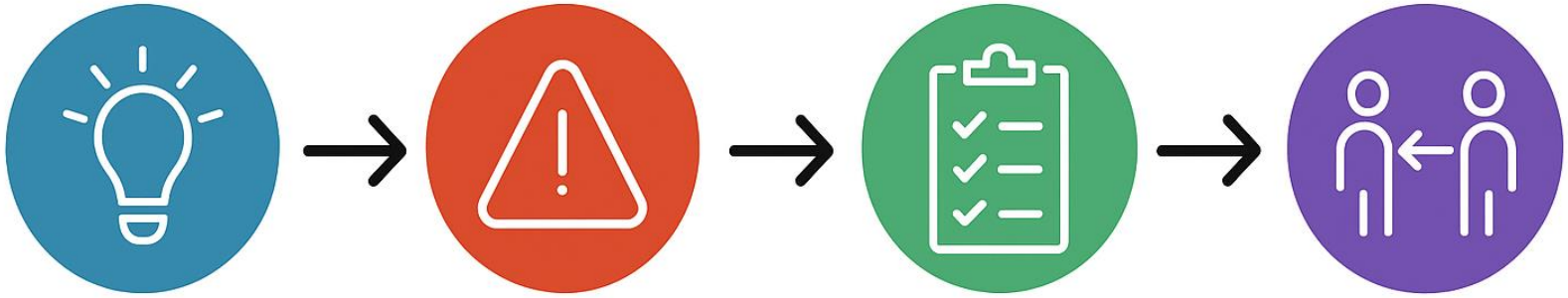
Overview



REIMAGINING SAFETY

Presence vs Absence

SERIOUS INJURY AND FATALITY

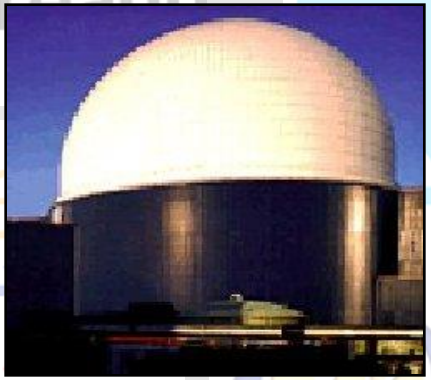
SIF Prevention

WORK AS IMAGINED VS WORK AS DONE

EXERCISE

Bridging the gap

Cross industry collaboration



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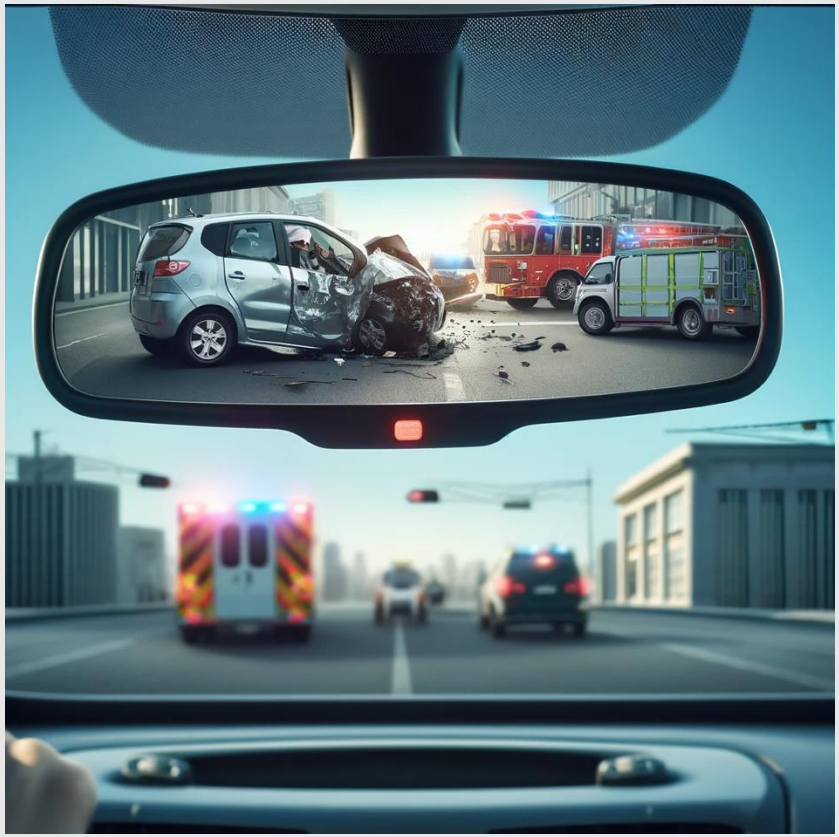
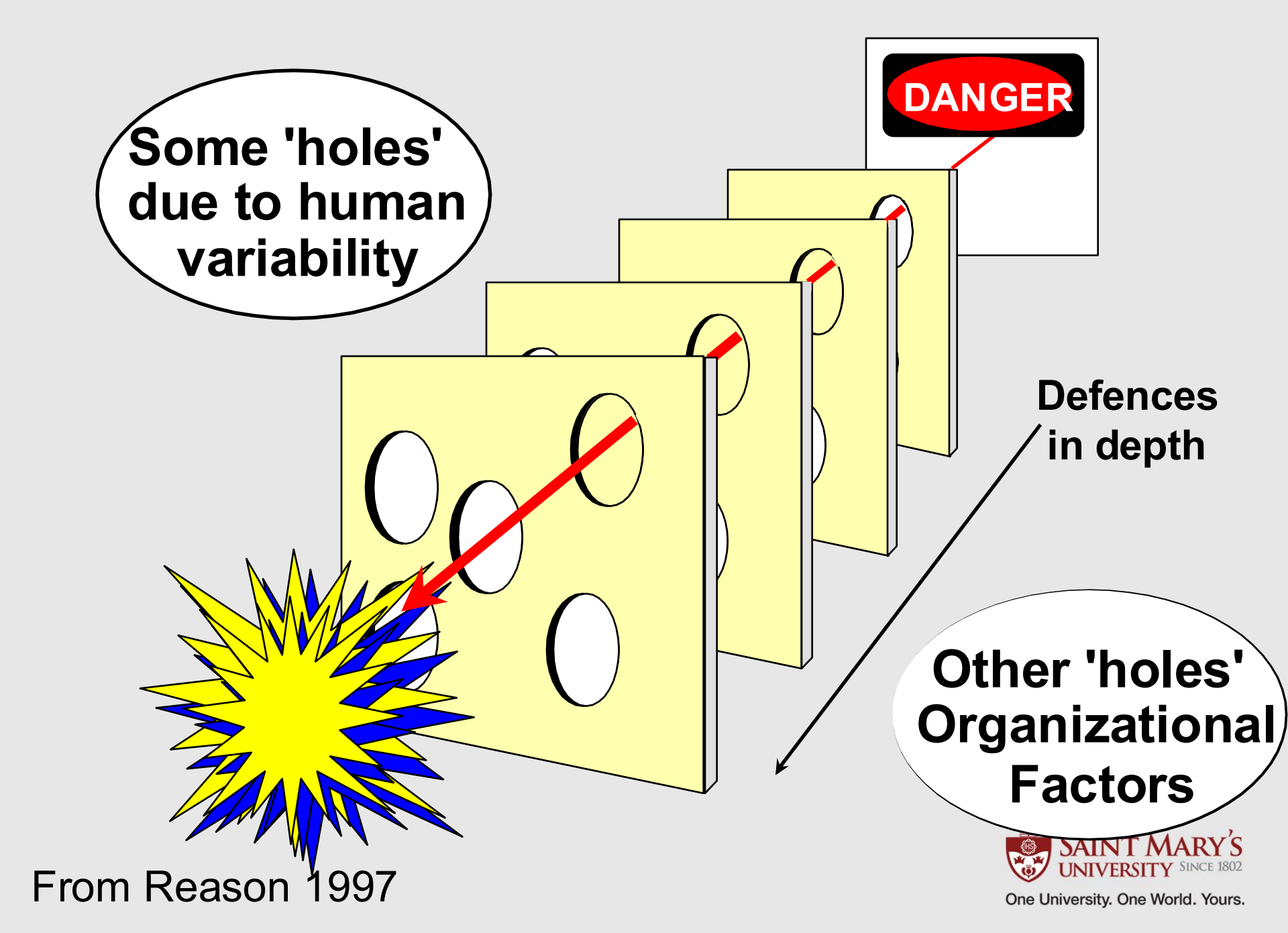
Reimagining safety

Reactive



Proactive



Human variability

- Errors and violations committed by people at the sharp end, e.g., pilots, control room operators.
- Direct impact on the safety of the system
- Usually immediately prior to the accident
- Often listed as the cause
- From a legal perspective the person who commits the error or violation are held responsible

Organizational factors

- Latent conditions to resident pathogens in the body
  - They lie dormant waiting for the right conditions to emerge, (e.g. cold sores)
- Examples of latent conditions include:
  - Poor design
  - Inadequate training
  - Unworkable procedures
- Arise from high level decisions within the organization or outside regulation
- Present in all organizations

Are these activities safe?

Completed without injury

Shift Toward Presence of Safety

- **CSA Z1000**
  - OHS-MS requires indicators to verify critical controls
- **Hollnagel – Safety-II**
  - Safety is generated when work succeeds; controls enable that success.
- **Dekker – Drift into Failure**
  - Controls erode quietly; without signals, deviance becomes normalized.

"People do not set out to break controls. Controls fade into the background of efficient work."

Presence not absence of safety

- Injury rate does not equal safety
  - Only provides information on a limited set of safety failures
- Many other ‘leading’ indicators only capture failure
- Need for indicators that assess the overall health of safety processes
  - The presence and quality of controls

Serious Injury and Fatality (SIF) prevention

- Why safety is important
- Everyone agrees preventing these events are important
- Prevention of strategic importance
- Infrequent so lagging data of little predictive value

SIF Prevention

- Identify hazards and activities that have the potential to result in a SIF
  - Falls from height
  - Struck by object
  - Crushing
- Identify critical controls/ barriers
- Systematically monitor controls
- Use results as safety performance indicator

Systems approach

- Safety outcomes reflect overall system performance
- Noncompliance with rules or error is a symptom not a cause
- Need to design safety arrangements to meet human needs and capabilities
  - Error tolerant
  - Minimize effort

Work as Imagined

Idealized:
WAI often presents an idealized version of work, assuming predictable conditions and strict adherence to rules and procedures.

Compliance:
Emphasis is placed on eliminating variability through standardized processes to ensure consistency and repeatability.

Expert led:
Developed based on assumptions and best practices, varying levels of consultation with those who perform the work.

Formal process:
WAI underpins formal systems such as safety management systems (SMS) and standard operating procedures (SOPs).

Work as Done

Dynamic and Adaptive:
Workers continuously adapt their actions to respond to changing conditions, such as weather, equipment failures, or time pressures.

Involves Trade-Offs:
Workers often balance competing priorities, such as safety, efficiency, and productivity, to achieve task objectives.

Emergent and Contextual:
Decisions and actions are shaped by the immediate environment and the constraints faced at the moment.

Reflects Human Expertise:
WAD demonstrates workers' ability to apply tacit knowledge, experience, and judgment to navigate complex situations.

Safety Improvement

- Focus on presence of safety not absence
- Identify gap between Work As Imagined (WAI) versus Work As Done (WAD)
- Understand the gap between WAI vs WAD
- Narrow the gap
  - Improve hazard control design

Improve control design

Likelihood of compliance =
Perceived benefit – (Effort required + Discomfort)

Options	Effort	Discomfort	Benefit	Compliance
Safety harness	Medium	High	High	Low
Scaffolding	High	Low	High	Medium
Erect barrier	Low	Low	High	High

Exercise WAI vs WAD

- Objective: Experience the gap between planned controls (WAI) and reality (WAD) and discover why safety critical controls are skipped.

1. Review hazard assessment (WAI), circle the 3 controls most likely to be skipped.
2. Compare with site observation summary (WAD).
3. Analyze behavioral friction factors.
4. Share one friction-removal idea per group.

Hazard Assessment

SIF Hazard	Critical Control(s) Planned	Responsible
Fall from roof edge	Temporary horizontal lifeline; 100 % tie-off	FP installer / Crew
Fall at ladder exit	Self-closing ladder-top gate	GC carpentry
Suspension trauma	Rescue tripod + inertial winch staged; crew briefed	Supervisor
Dropped hand tool	Tool lanyards on every hand tool	Crew lead
Swinging/dropped load	Tag-lines; two signalers (roof & ground)	Rigger / Signalers
Excess wind	Roof anemometer; stop-work > 35 km/h	Roof signaler
Rain slip/visibility	Stop-work rule on drizzle/rain	Supervisor

Predict Skipped Controls

- Each group circle the THREE controls you believe the crew will skip in real life.
- You have 3 minutes.

Site Observation

Control	Observed?	Notes
Horizontal lifeline	NO	Crew leap-frogs on single anchor
Harness + SRL	YES	All workers clipped in
Ladder-top gate	NO	Gate missing; opening unprotected
Rescue tripod & winch	NO	Kit left in trailer; no briefing
Tool lanyards	NO	Only drill tethered; others free-hand
Tag-lines	YES	Attached and used
Two signalers	YES	Roof & ground signalers with radios
Wind monitoring	YES	Anemometer readings logged
Rain stop-work	YES	Rule briefed; sky clear

Which Controls Were Skipped?

- Skipped: Lifeline ▸ Ladder-gate ▸ Rescue tripod ▸ Tool lanyards
- Implemented: Harness + SRL ▸ Tag-lines ▸ Two signalers ▸ Wind & weather limits

- What patterns do you notice?

Behavioral Friction Matrix

Control	Effort	Discomfort	Time	Other Friction	Skip-Risk
Horizontal lifeline	High	Low	Medium	Rig & tension line	HIGH
Ladder-top gate	Medium	Low	High	Non-productive carpentry	HIGH
Rescue tripod/winch	Medium	Low	Medium	Bulky; 'never used'	HIGH
Tool lanyards	Medium	Medium	Medium	Restricts wrist	MED-HIGH
Harness + SRL	Low	Medium	Low	Familiar & required	LOW-MED
Tag-lines	Low	Low	Low	Immediate benefit	LOW

Analyze Friction & Flip the Payoff

- 1. Which skipped control surprised you most? Why?
- 2. Choose ONE high skip-risk control. List two tweaks that make it easier or rewarding.
- 3. How could supervisors recognize the PRESENCE of these controls in real time?

Key Take-Away

- Controls with high effort, discomfort, or time cost are the ones most likely to disappear in Work as Done.

- Our job as safety leaders: REDUCE the friction and REWARD the presence.

Why Controls Get Skipped

Consequence	How it Shows Up	Effect on Behaviour	Illustrative Example
Immediate Time Penalty	Control adds minutes or disrupts flow.	Instant time loss outweighs uncertain injury prevention; behaviour extinguishes.	Lifeline install ≈ 15 min, crew skips to avoid schedule slip.
Extra Physical Effort / Discomfort	Control is heavy, awkward, restricts movement.	Immediate discomfort acts as punisher.	Tool-lanyards limit wrist rotation; workers unclip for a quick cut.
Social Reinforcement for Productivity	Peers/supervisors praise speed over safety compliance.	Positive reinforcement for skipping; negative for using control.	"Still fussing with that rescue tripod? We're burning daylight."
Unclear Personal Value ('Why bother?')	Hazard not visible; control's efficacy doubted.	No meaningful positive consequence; behaviour feels pointless.	Never seen suspension failure, lifeline seen as overkill.

Why Controls Get Skipped

Consequence	How it Shows Up	Effect on Behaviour	Illustrative Example
Lack of Visible Feedback / Recognition	Safe acts go unnoticed; only injuries get attention.	No positive consequence -> behaviour fades.	Supervisor tracks production but ignores anchor-usage checks.
Equipment Availability Friction	Control stored far, shared, or needs paperwork.	Extra hassle competes with task demands.	Rescue kit in locked container 100 m away.
Perceived Blame for Delay	Using control may invite criticism for slowing work.	Social punishment risk > safety benefit.	Signalers avoid wind stop-work call to not upset foreman.
Conflicting Incentive Systems	Bonuses/KPIs reward speed, output, uptime.	Tangible gain for shortcuts outweighs safety gain.	Piece-rate per HVAC swap, ladder-gate install eats payout.
Delayed, Uncertain Nature of Injuries	Serious harm is rare; previous no-harm events reinforce shortcuts.	Safe behaviour lacks immediacy of reinforcement.	Yesterday's windy lift fine w/out ground signaler → 'safe enough'.

ENSURING THE PRESENCE OF SAFETY

Summary

SIFs are typically caused by well understood hazards that people believed were being managed effectively

SIFs occur because the imagined controls were not being used in practice

SIF prevention involves identifying critical controls and ensuring they are working

Thank you

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Failure resistant organisation

- Preoccupation with failure
- Employee report errors and problems
- Develop deep understanding of problems and issues
- Decentralised decision making
- Seek employee concerns