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SCiO

Systems and
Complexity in
Organisation



STOWELL CONSULTING
Conceiving • Converting • Resulting

Is Safety breaking the Laws?

Open Meeting

18th March 2026



What is your level of understanding of Systems Laws?



What is your level of understanding of safety management?

The core principle of health and safety law



5 steps to risk management

- Identify hazards
- Assess the risks
- Control the risks
- Record your findings
- Review the controls

<https://www.hse.gov.uk/simple-health-safety/risk/steps-needed-to-manage-risk.htm>

ISO 45001 Occupational health and safety management systems – Requirements with guidance for use

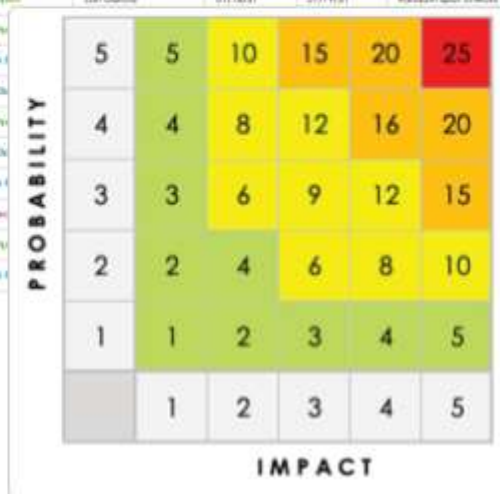
6.1.2.2 Assessment of OH&S risks and other risks to the OH&S management system

The organization shall establish, implement and maintain a process(es) to:

- a) assess OH&S risks from the identified hazards, while taking into account the effectiveness of existing controls;
- b) determine and assess the other risks related to the establishment, implementation, operation and maintenance of the OH&S management system.

The organization's methodology(ies) and criteria for the assessment of OH&S risks shall be defined with respect to their scope, nature and timing to ensure they are proactive rather than reactive and are used in a **systematic way**. Documented information shall be maintained and retained on the methodology(ies) and criteria.

Risk ID	Risk Description	Impact Description	Impact Level Rate 10,000 to 5,000/yr	Probability Level Rate 10,000 to 5,000/yr	Priority Level Impact x Probability Address the highest first	Mitigation Notes	Status	Owner	Date Identified	Last Reviewed	Notes
SAP-001	Wet floor near the loading bay	Slip, minor injury	2	4	8	Post signage, mop the area daily	Open	Lori Garcia	01/05/21	01/05/21	Near door 2
SAP-002	Low overhead beam	Head bump hazard	3	3	6	Floor padding, warning tape	In Progress	Melanie McLean	01/04/21	01/10/21	Truck crew flagged
SAP-003	Broken step on scaffolding	Fall from height	5	3	15	Replace the damaged slat	Escalated	Marta Huku	01/07/21	01/09/21	Reported by the safety audit
SAP-004	Loose cables near the control room	Tripped hazard	2	2	4	Cables routing ordered	In Progress	Melanie Todd	01/09/21	01/11/21	Start form for lead
SAP-005	Forklift blind corner	Collision potential	4	4	16	Add a convex mirror	Open	Olivia Carter	01/10/21	01/12/21	High traffic area
SAP-006	Chemical storage mislabelled	Exposure risk	4	3	12	Re-label, safety training refresh	Open	Patsy Hahamuro	01/11/21	01/12/21	Two bins affected
SAP-007	Ventilation fan not working	Heat buildup in the work area	3	2	6	Temp fan in use, part on order	In Progress	Raghu Prakash	01/12/21	01/13/21	Summer risk
SAP-008	Broken PPE dispenser	Access denied for gloves	2	2	4	Order a new unit	Closed	Berna Bailey	01/13/21	01/13/21	Received 01/14
SAP-009	Unsecured ladder during refuel	Fall potential	5	2	10	Locking brace added	Closed	Sarah Goodwin	01/14/21	01/17/21	Training reminder sent
SAP-010	Dust accumulation near fans	Respiratory irritation	3	3	9	Scheduled deep clean	In Progress	Sasha Pethou	01/18/21	01/18/21	Vendor scheduled 01/20
SAP-011	Noise levels exceeded BS 68	Hearing loss over time	4	4	16	Enforce ear protection	Open	Lori Garcia	01/14/21	01/19/21	Random spot checks
SAP-012	Power tool left plugged in	Electrocution risk	5	2	10	Daily end-of-shift checks	Open				
SAP-013	Unhooked lamp worker	Incorrect machine use	3	3	9	Shadow shifts added	In Progress				
SAP-014	Oil spill at the workbay	Slip, twisted ankle	3	4	12	Immediate cleanup protocol	Open				
SAP-015	No emergency light in storage	No navigation issue in blackout	2	3	6	Install a backup light	Open				
SAP-016	Loose handrail on stairs	Loss of balance risk	3	2	6	Tightened and re-tested	Closed				
SAP-017	Leaking pipe above walkway	Slip, fall hazard	3	4	12	Leak patched, floor mat placed	In Progress				
SAP-018	Faulty fire alarm sensor	Delayed alert in an emergency	3	2	6	Vendor notified	Open				
SAP-019	The stack of pallets is unstable	Tip-over hazard	3	3	9	Rework stack, add safety straps	Open				
SAP-020	Debris near the forklift route	Distraction hazard	3	4	12	Assign cleaning duty	In Progress				



Risk Register

Systems Laws vs. Risk Registers

Conant-Ashby Theorem

“Every good regulator of a system must be a model of that system.”

Risk Registers are poor models. Safety interventions are generally random with poor results.

Law of Requisite Variety (Ashby’s Law)

“Only variety can destroy variety.”

Risk Registers have extremely limited variety compared to the realities of the environment.

Darkness Principle

“No system can be known completely.”

Risk Registers draw a boundary around the ‘credible and foreseeable’, ignoring the rest. “We have a risk register therefore we must be safe.”

Adams 3rd Law

“A system composed of the lowest risk components available will be a high-risk system.”

Risk Registers isolate risks, ignore interdependencies and are reviewed annually. Short terms dynamic changes are not considered.

The absence of effective risk management (failing safety management systems), has resulted in spawning of safety fads:

All trying to find a new way to improve safety performance



All focused on the occupational environment



Is occupational safety breaking Systems Laws?

Who's affected?

HSE Guidance on Policies

“If you have five or more employees, you must write your policy down and include arrangements for health and safety.

...for example, doing a risk assessment...”

If you've seen this at work, then your company will be breaking Systems Laws.



Health and Safety Law
What you need to know

All workers have a right to work in places where risks to their health and safety are properly controlled. Health and safety is about stopping you getting hurt at work or ill through work. Your employer is responsible for health and safety, but you must help.

What employers must do for you

1. Identify what could harm you in your job and the government is trying to stop it. This is your risk assessment.
2. It is your employer's responsibility to make sure risks will be controlled and will not harm you.
3. Control and work with you and your health and safety representative to prevent accidents from happening.
4. Tell you about risks to your health and safety and what you need to do to stay safe.
5. Tell you about risks to your health and safety and what you need to do to stay safe.
6. Provide safety, working facilities and training when needed.
7. Provide information from all workers.
8. Report serious, dangerous and dangerous incidents to your nearest Health and Safety Executive (HSE) office. **0845 300 9923**
9. Make sure you are not asked to do anything that could harm you or your health and safety.
10. Work with you to prevent accidents from happening.

What you must do

1. Follow the company's system and what you are told to do.
2. Take reasonable care of your own and other people's health and safety.
3. Co-operate with your employer to help you stay safe.
4. Tell your employer about any health and safety problems you see.

If there's a problem

1. If you are worried about health and safety in your workplace, talk to your employer, supervisor, or health and safety representative.
2. If you can't talk to your employer, you can go to your nearest HSE office.
3. If you are talking to your employer, you are not allowed to stop your work. If you are not sure, talk to your health and safety representative or the Health and Safety Executive (HSE). They will help you to get your work back to normal.

0845 345 0055
www.hse.gov.uk

Free safety
You can get advice on the safety laws that apply to you and your workplace. For advice, call 0845 300 9923.

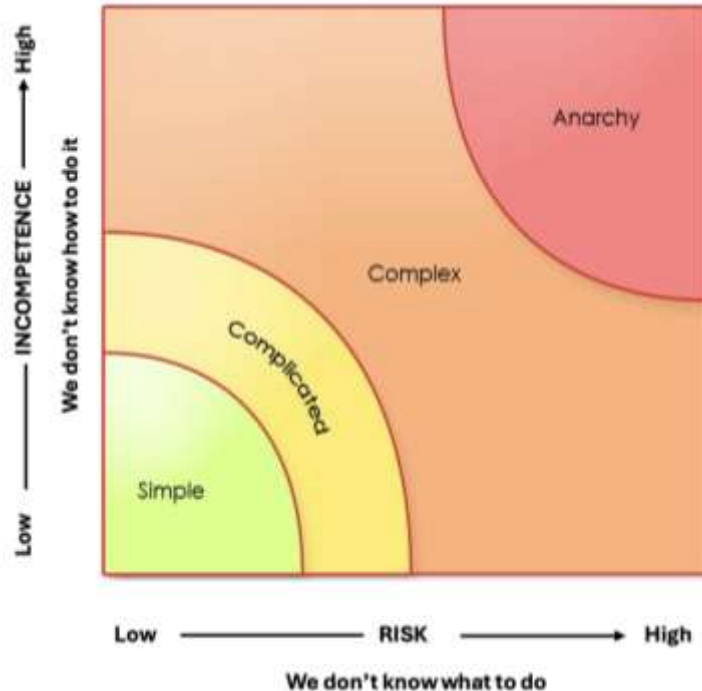
Employment rights
Find out more about your employment rights at www.direct.gov.uk

HSE
Health and Safety Executive

Reframing risk management with a Systemic approach

“Risk is not knowing what you are doing.” – Warren Buffet

Variation on the Stacey Matrix: “All models are wrong, but some are more useful than others.”



Simple: Basic tasks in situations that do not need explanation.

Complicated: Activities in situations that require a level of information, instruction, training & supervision. Risk assessments & Method Statements. Safe Systems of Work. Rules and legal compliance.

Complex: Situations that are dynamic, uncertain or ambiguous with interconnected factors, multiple stakeholders and no immediate solutions.

Anarchy: Situations that should not be entered into.

SAFER interventions for Complex situations

Systemic: address multiple, interconnected causal factors, not isolated symptoms.*

Agreed: by the decision makers / duty holders / power holders.

Financially proportionate: cost is justified relative to expected benefit.

Emotionally motivating: for those having to make the intervention happen.

Resilient: fits to the changing environment.

Effectiveness
Efficiency
Efficacy

* Any Systems Thinking technique(s) can be used to assess the situation: CSH, SSM, VSM, SD etc.
Uses Meadow's 12 leverage points to design the intervention.

Meadow's 12 leverage points

Safety as is...

12. Numbers
11. Buffers
10. Stock and Flow Structures
9. Delays
8. Balancing Feedback Loops
7. Reinforcing Feedback Loops

Most organizations concentrate on Levels 9-12 (Accident Statistics, Training, PPE).

Safety ought to be...

6. Information Flows
5. The Rules of the System
4. The Power to Self-Organize
3. The Goals of the System
2. The Paradigm Out of Which the System Arises
1. The Power to Transcend Paradigms

High performing HSE organizations increasingly intervene at Levels 6-2.

The intervention should work at a leverage point higher than the existing leverage driving the system.

Contemporary Safety Performance Indicators

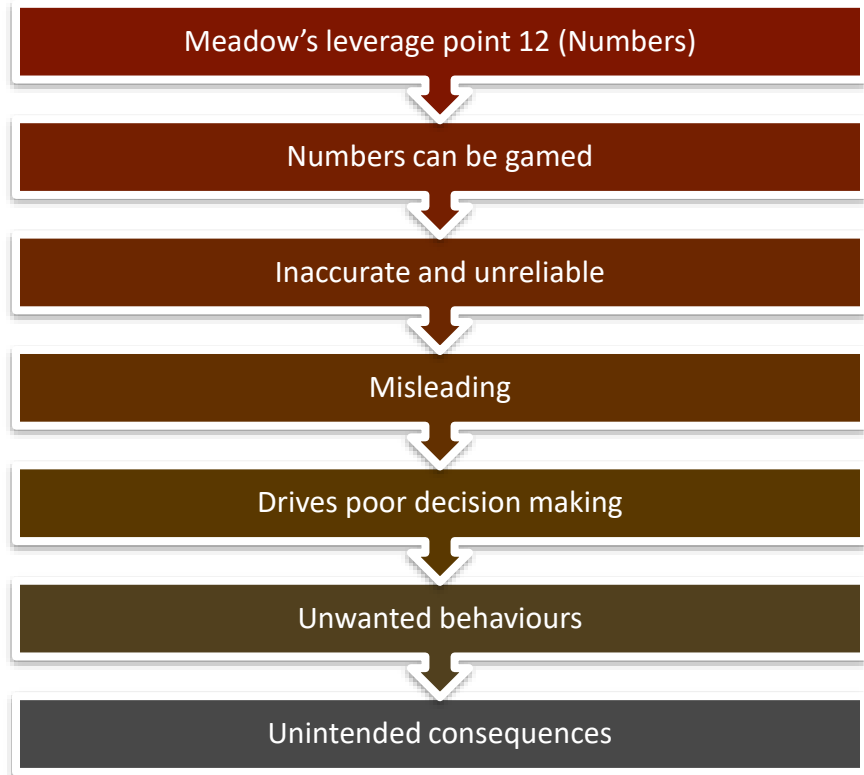
each month. The monthly report will include a section dedicated to HSSE, including HSSE statistics.

The following lagging indicators shall be captured in each report:

- Number of fatalities
- Number of lost time injuries
- Number of restricted work cases
- Number of medical treatment cases
- Number of first-aid cases
- Number of damages
- Number of near-miss incidents
- Number of security incidents
- Number of environmental incidents
- Number of days away from work
- Number of high potential incidents
- Number of life saving rules violations
- Lost time incident rate
- Total recordable incident rate

The following leading indicators shall be captured in each report:

- Number of HSSE inspections conducted by managers and line managers
- Hazard observation indicator (# of hazard observation cards / 200,000 manhours)
- Number of HSSE audits
- Number of toolbox talks
- Number of training hours
- Hazard observation close-out [%]
- Number of risk assessments conducted/reviewed
- Number of emergency response drills
- Number of HSSE inductions
- Number of safety stand-downs



Case Study: SAFER Intervention

Project: French offshore wind farm

Client (JV): French Bank, Spanish Energy Co.

Contractor: Foundation manufacturer

Location: Spanish shipyard

Client H&S Reps: seen as the 'Safety Police'

Complex Situation:

7000 safety observation in 2 years

Increasing number of accidents

Letters of concern from client management

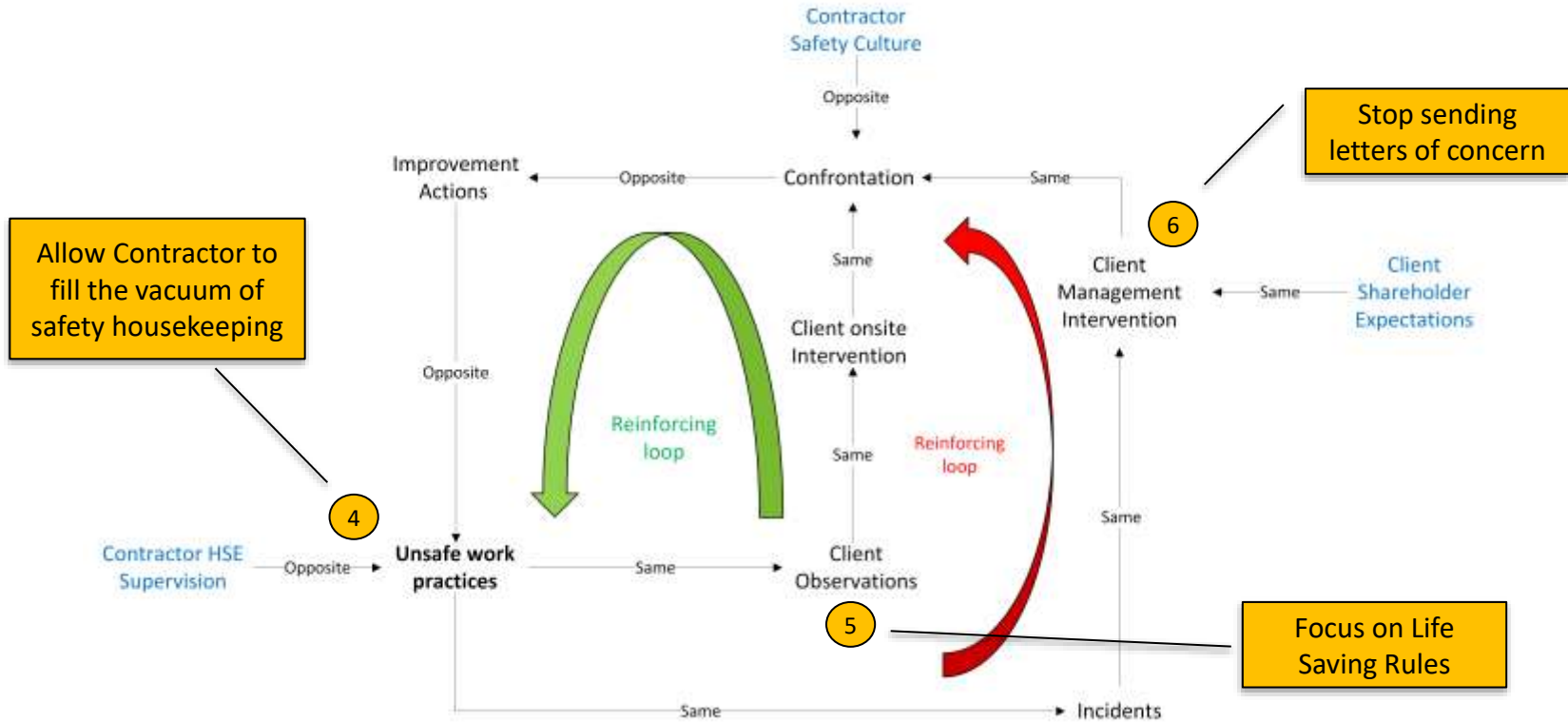
Closed mindset from contractor management





**Which Systems Thinking
methods or tools would you
use?**

Systemic analysis: Causal Loop Diagram



Making it a SAFER Intervention

Systemic

- Used CLD to assess the situation
- Used Meadow's leverage points to design interventions

Agreed

- Presented to Client management and approved
- Presented to Contractor management and agreed

Financially Proportionate

- Zero cost for operational change
- Potential to reduce incurred costs of accidents

Emotionally Motivating

- Reduced confrontation between Client & Contractor
- Client HSE reps on site empowered to take life saving actions (felt valued)

Resilient

- Used existing processes for reporting and monitoring (stabilized the environment)
- Life Saving Rules an effective focus for sub-contractors (irrespective of procedures)

Outcomes after 2 months

Client Management

- Turned attention to other issues
- Did not acknowledge their part in creating the initial situation

Client H&S Reps

- Reduced stress, more productive
- Better relationship with Contractor teams

Contractor H&S Team

- Took ownership of formal weekly inspections
- Routinely visible on-site supervising workforce

Performance isn't always about accident statistics.

SAFER Intervention Performance – a new metric

Stafford Beer, *Brain of the Firm*, 2nd Ed., Page 164

$$Performance = \frac{Actuality}{Potentiality}$$

Actuality = what we are managing to do now under existing resources and constraints

Potentiality = what we ought to be doing by developing resources and removing constraints

$$Performance = \frac{\# \text{ Successful SAFER Interventions}}{\# \text{ Attempted SAFER Interventions}}$$

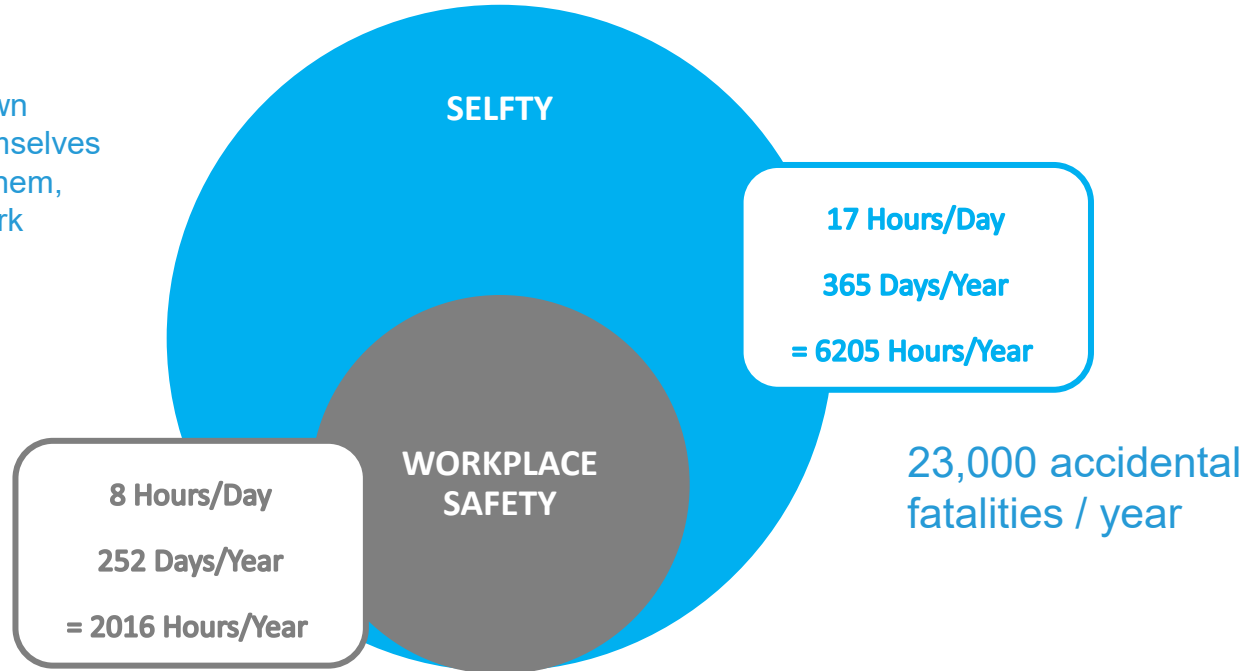
Safety performance is now the output of the safety organisation.

Meadow's 3rd leverage point: change the goal of the system.

What about the bigger picture?

The paradigm shift (Meadow's 2nd leverage point)

Selfty: the individual's own capability to protect themselves and the people around them, inside and outside of work



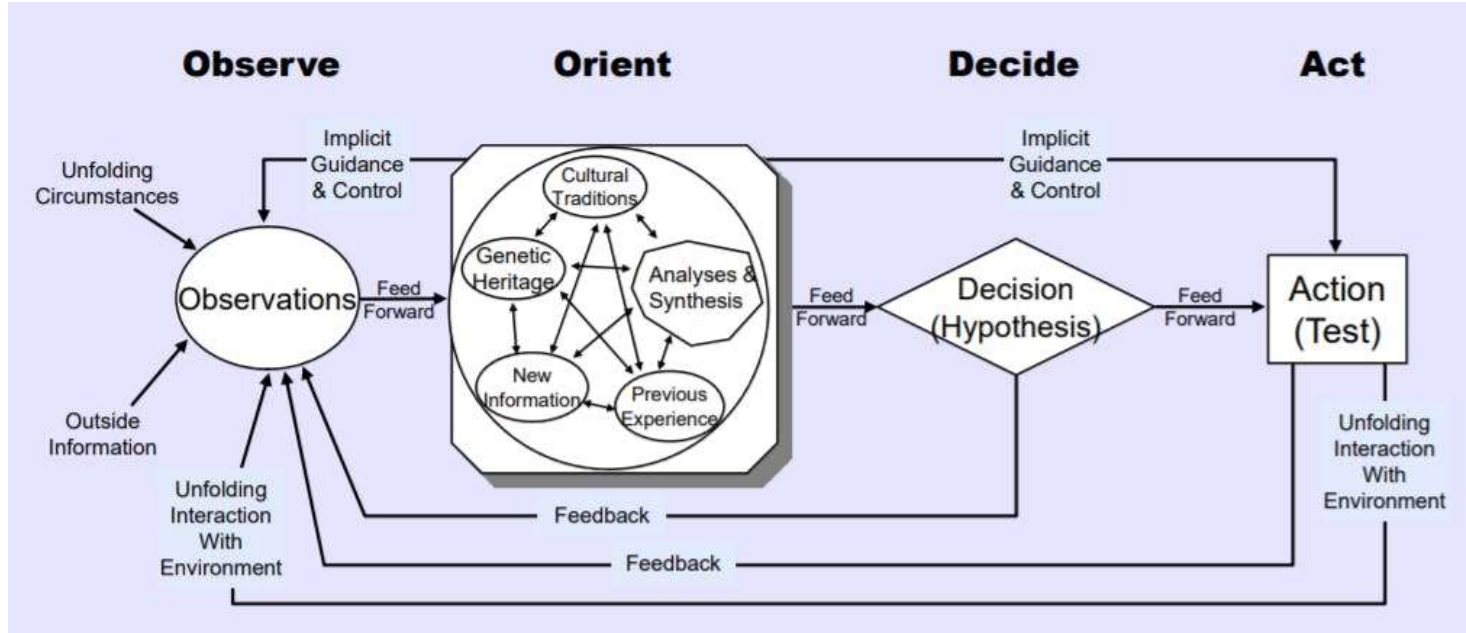
130 occupational accident fatalities / year

Has safety been looking for the wrong things?



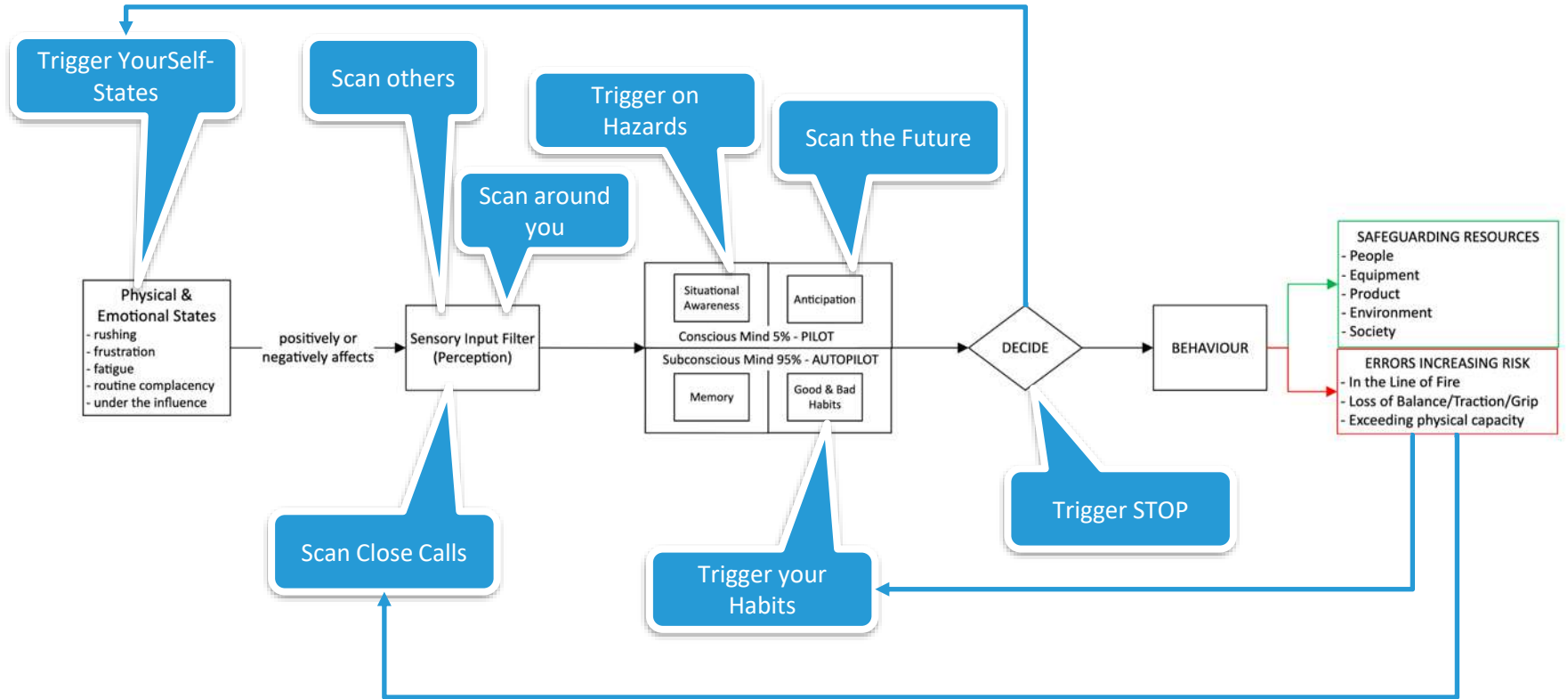
The Heart of SELFTY - John Boyd's OODA Loop

Used to get inside the enemies' decision cycle and disrupt it.



What if the enemy is ourself ?

SELFTY Competencies enhancing OODA Loop performance



Navigating SELFTY in layman's terms

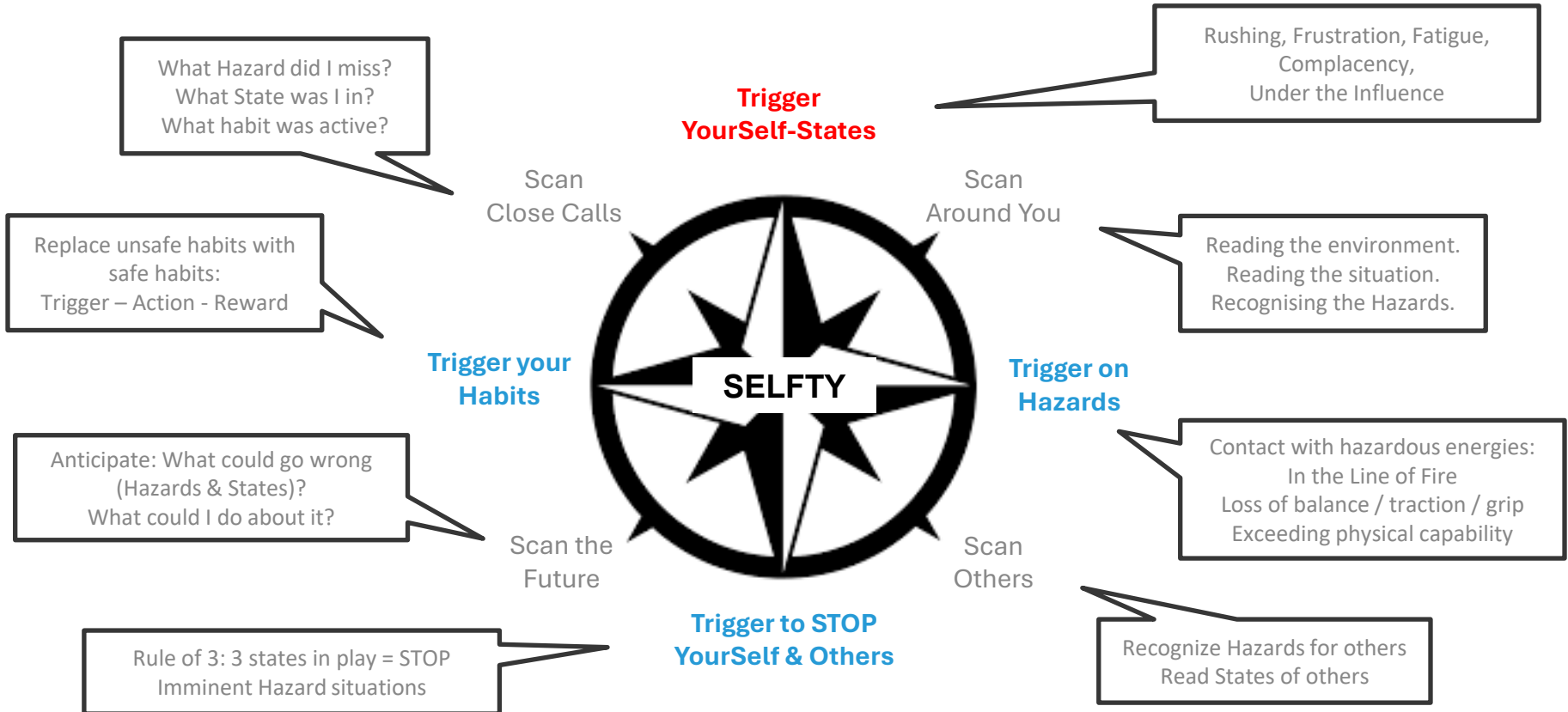
We need a compass to navigate a ship.

We need a compass to guide our morals.

We need a compass to protect our *Self*.



The Selfty Compass – Navigate your way through life





**As an adult, where was your
worst/most memorable
accident/injury?**

Three reasons to change the safety paradigm:

01

People die at home not at work.

02

Safety delivers in the moment a decision gets made.

03

The best safety cultures are built on people who genuinely look out for each other.

Two questions worth asking yourself:

01

Have you every received a call from an employee saying they won't be coming in today?

02

When you leave work at the end of the day are you still concerned about safety?

One place to go:

