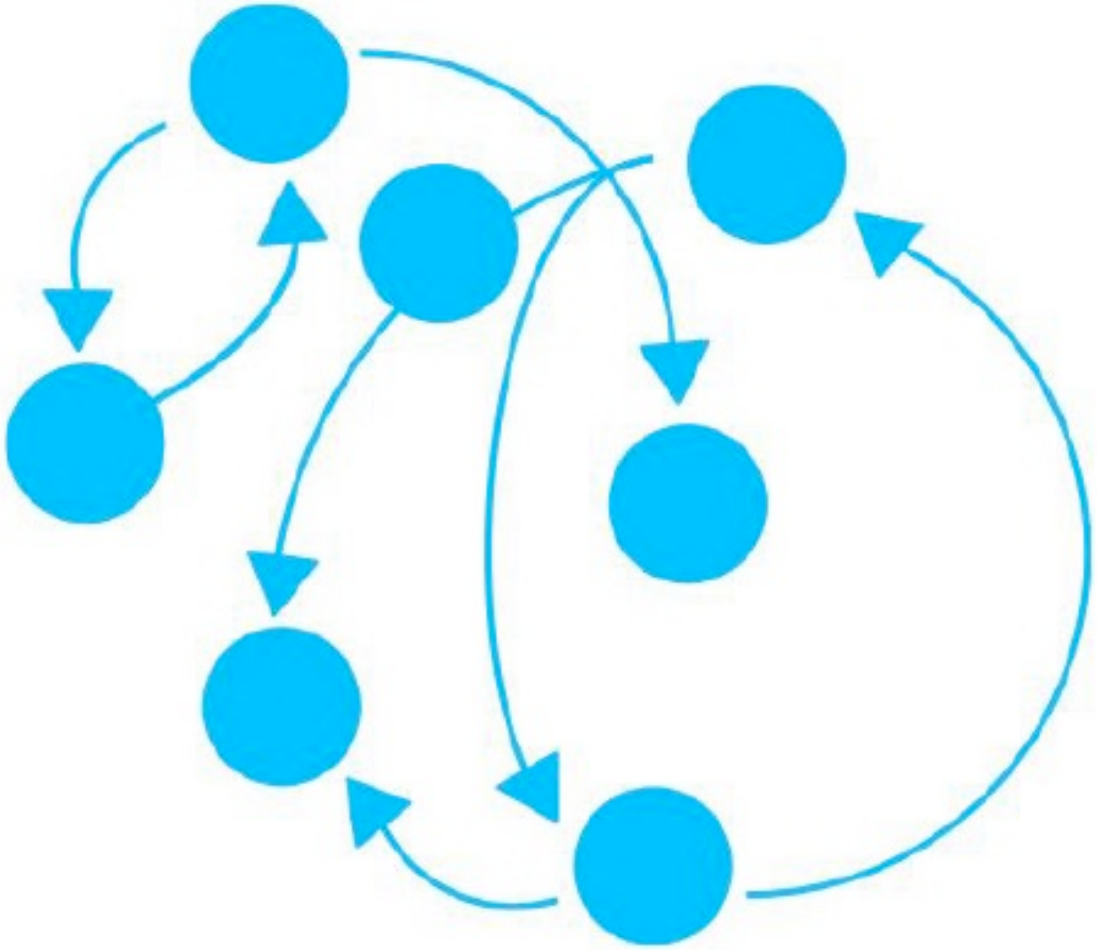


Systems Thinking

UNB
EST. 1785
UNIVERSITY OF NEW BRUNSWICK

A novel approach to Safety Management

Speaker Bio

Glyn Jones

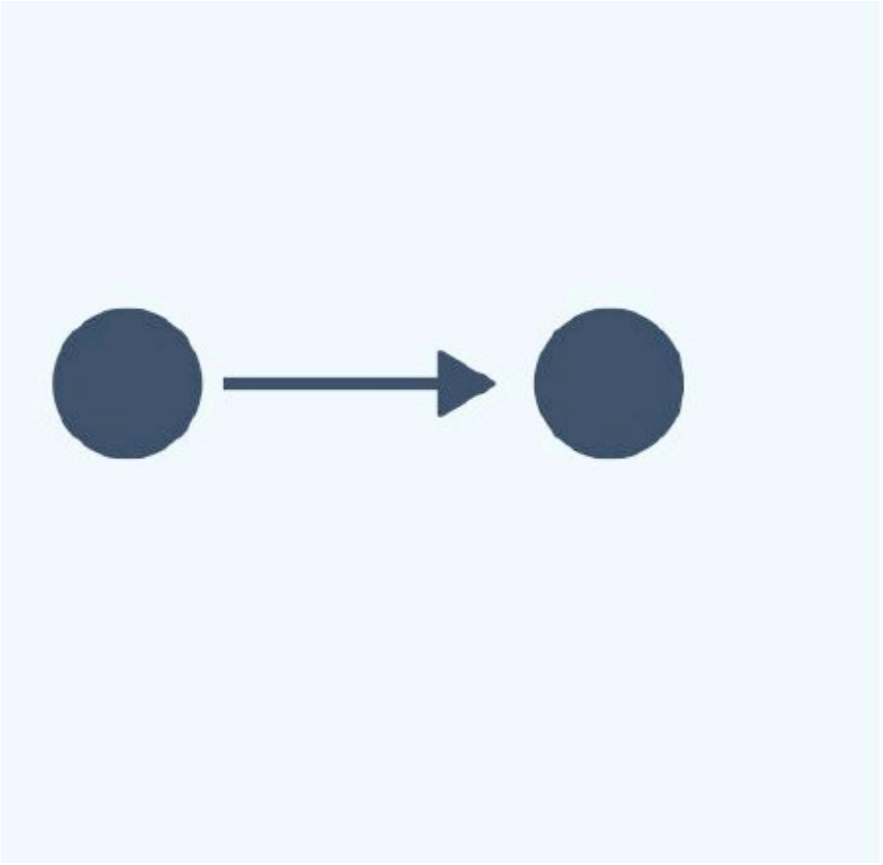
Agenda

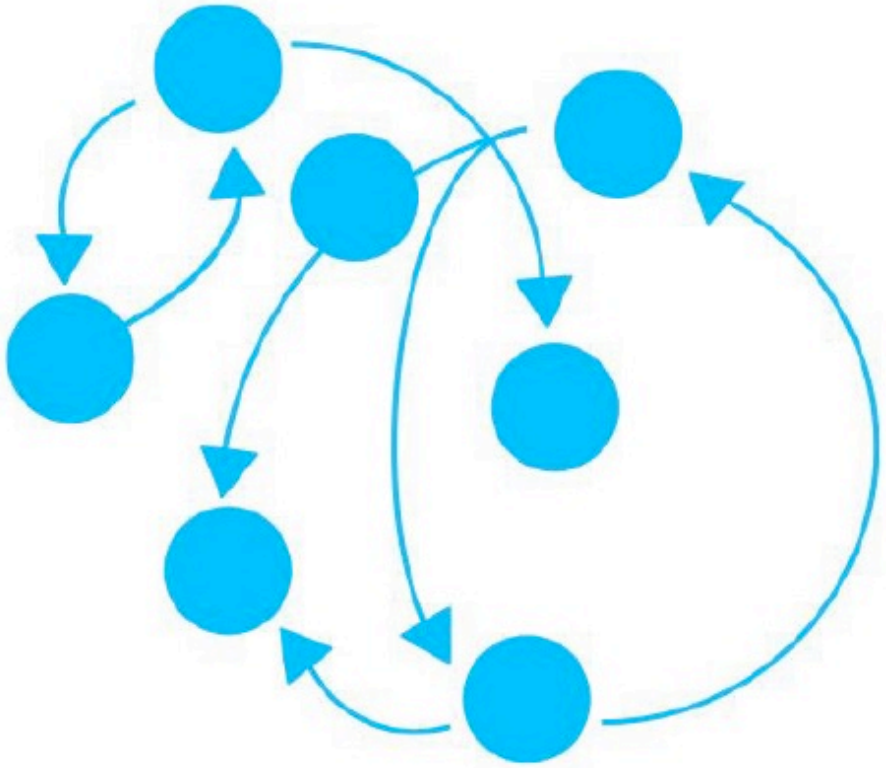
In this webinar we will discuss:

- Review traditional views of workplace hazards, hazard controls, and risk management
- Discuss the most common causes of workplace incidents
- Describe and discuss the various systems common to most organizations that impact workplace health and safety outcomes
- Describe the interactions in the systems and failures that often result in workplace incidents
- Discuss how to use information and findings from workplace inspections and incidents to improve systems
- Provide a framework for safety practitioners to start the “systems thinking” conversation at your workplace

Donella Meadows was an American environmental scientist, educator, and writer. She is best known as lead author of the books *The Limits to Growth* and *Thinking in Systems: a Primer*. She was a research fellow at the Massachusetts Institute of Technology.

Traditional versus Systems Thinking





Why do you go to work? Why is your company successful or not so successful? What makes your workplace great or not so great? What makes your workplace safe or not so safe?

EMPLOYEE HEALTH

Why the approach to worker health needs to be more holistic

https://www.theglobeandmail.com/report-on-business/careers/workplace-award/why-the-approach-to-worker-health-needs-to-be-more-holistic/article38125852/

Businesses are realizing that they need to look at their employees' health in a holistic manner.

GLYN JONES
SPECIAL TO THE GLOBE AND MAIL

PUBLISHED 10 MINUTES AGOUPDATED FEBRUARY 27, 2018

The need for a more holistic approach to worker health and safety is gaining momentum across North American workplaces. It is now recognized that the traditional transactional approach to safety, where the focus is simply on assessing hazards, doing inspections, providing worker training, and investigating incidents, is not working. The fatality rate and disabling injury rate in Canada has not changed in the last decade. A novel approach is needed if we are going to make progress, make workplaces safer, and

THE NEXT HUMAN CAPITAL MANAGEMENT TREND:

DE-SILOING HRM AND OHS TO ACHIEVE INTEGRATED WORKER HEALTH

BY BILL HOWATT AND GLYN JONES

HR Reporter | Canadian Occupational Safety
THOMSON REUTERS®
November 23, 2018

OH&S Management is a General Duty of Employers

Obligations of employers, workers, etc.

2(1) Every employer shall ensure, as far as it is reasonably practicable for the employer to do so,

(a) the health and safety of

(i) workers engaged in the work of that employer, and

(ii) those workers not engaged in the work of that employer but present at the work site at which that work is being carried out, and

(b) that the workers engaged in the work of that employer are aware of their responsibilities and duties under this Act, the regulations and the adopted code.

This is the written requirement of the Occupational Health and Safety Act in Alberta

Part 2 Hazard Assessment, Elimination and Control

Hazard assessment

7(1) An employer must assess a work site and identify existing or potential hazards before work begins at the work site.

(2) An employer must prepare a report of the results of a hazard assessment and the methods used to control or eliminate the hazards identified.

(3) An employer must ensure that the date on which the hazard assessment is prepared or revised is recorded on it.

(4) An employer must ensure that the hazard assessment is repeated

(a) at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions,

(b) when a new work process is introduced,

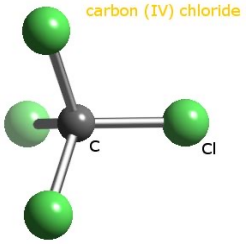
(c) when a work process or operation changes, or

(d) before the construction of a new work site.

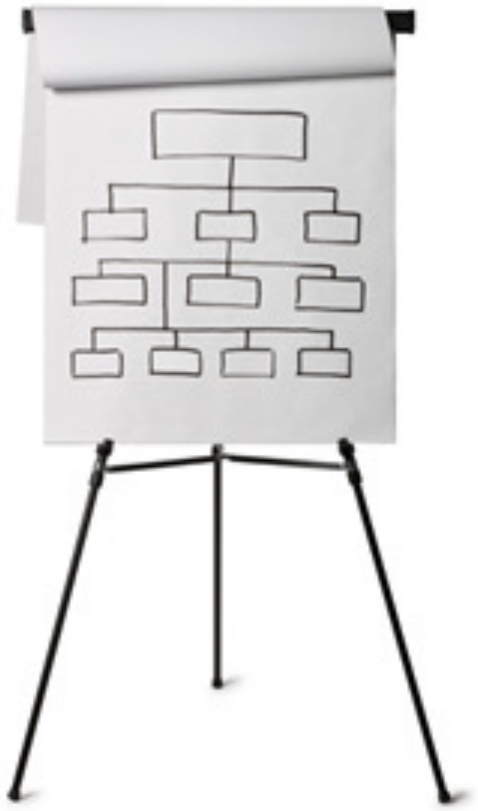
What hazards are we exposed to?

Examples of Hazards and Their Effects

Workplace Hazard	**Example of Hazard**
Thing	Circular Saw
Substance	Carbon tetrachloride
Material	Crushed rock
Source of Energy	Pressurized steam
Condition	Poor housekeeping
Process	Welding
Practice	Asbestos mining



Hazard Assessment



List:

1. Occupations/Positions from Org Chart
2. Jobs of each occupation/position
3. Tasks of each job
4. Steps of each task
5. Hazards of each step
6. Controls for each hazard

Voila! The Hazard Assessment is complete!

Select Controls following the Hierarchy

Elimination is the first order control required by the Code

Engineering or Administration are the second and third order controls required by the Code

PPE is recommended as the last resort

Hazard elimination and control

9(1) If an existing or potential hazard to workers is identified during a hazard assessment, an employer must take measures in accordance with this section to

(a) eliminate the hazards, or

(b) if elimination is not reasonably practicable, control the hazard.

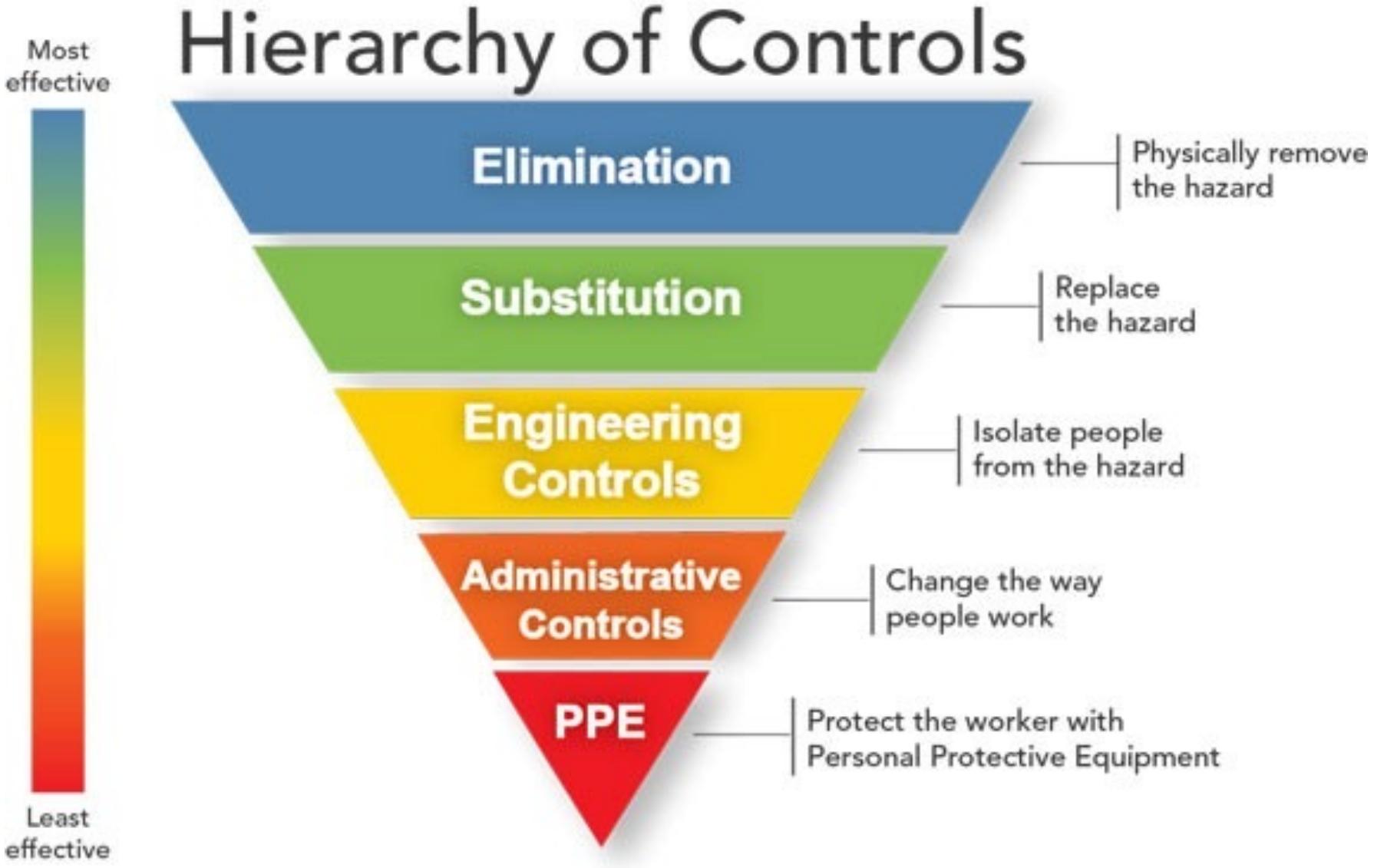
(2) If reasonably practicable, an employer must eliminate or control a hazard through the use of engineering controls.

(3) If a hazard cannot be eliminated or controlled under subsection (2), the employer must use administrative controls that control the hazard to a level as low as reasonably achievable.

(4) If the hazard cannot be eliminated or controlled under subsections (2) or (3), the employer must ensure that the appropriate personal protective equipment is used by workers affected by the hazard.

(5) If the hazard cannot be eliminated or controlled under subsections (2), (3) or (4), the employer may use a combination of engineering controls, administrative controls or personal protective equipment if there is a greater level of worker safety because a combination is used.

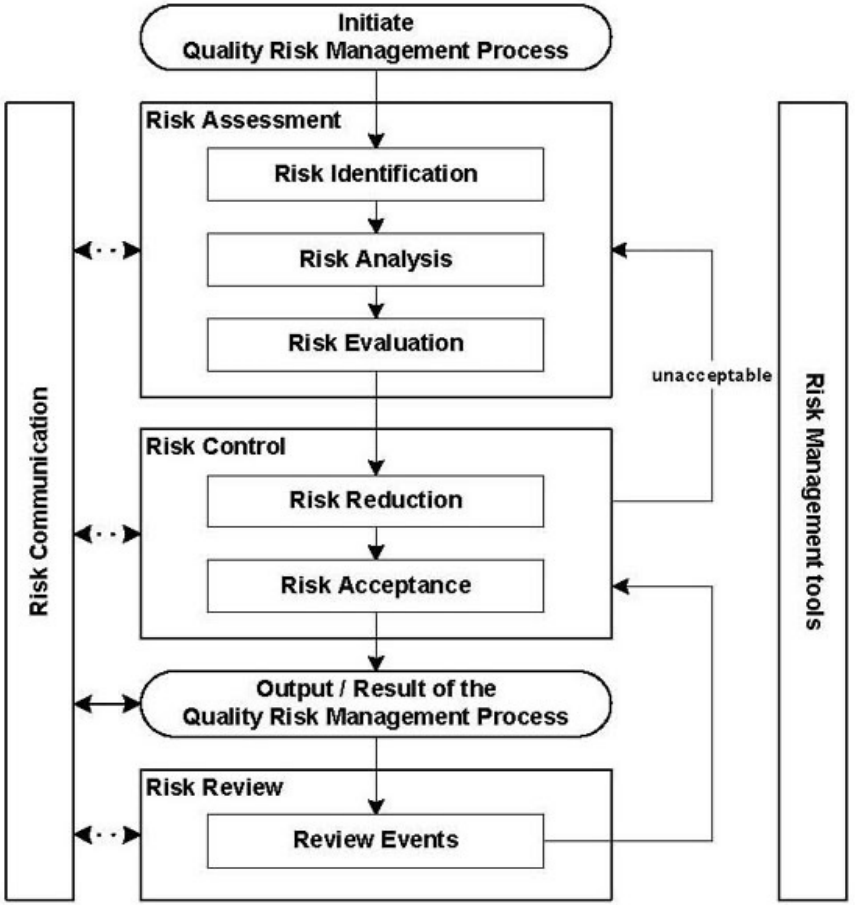
Traditional views of workplace hazards, hazard controls, and risk management



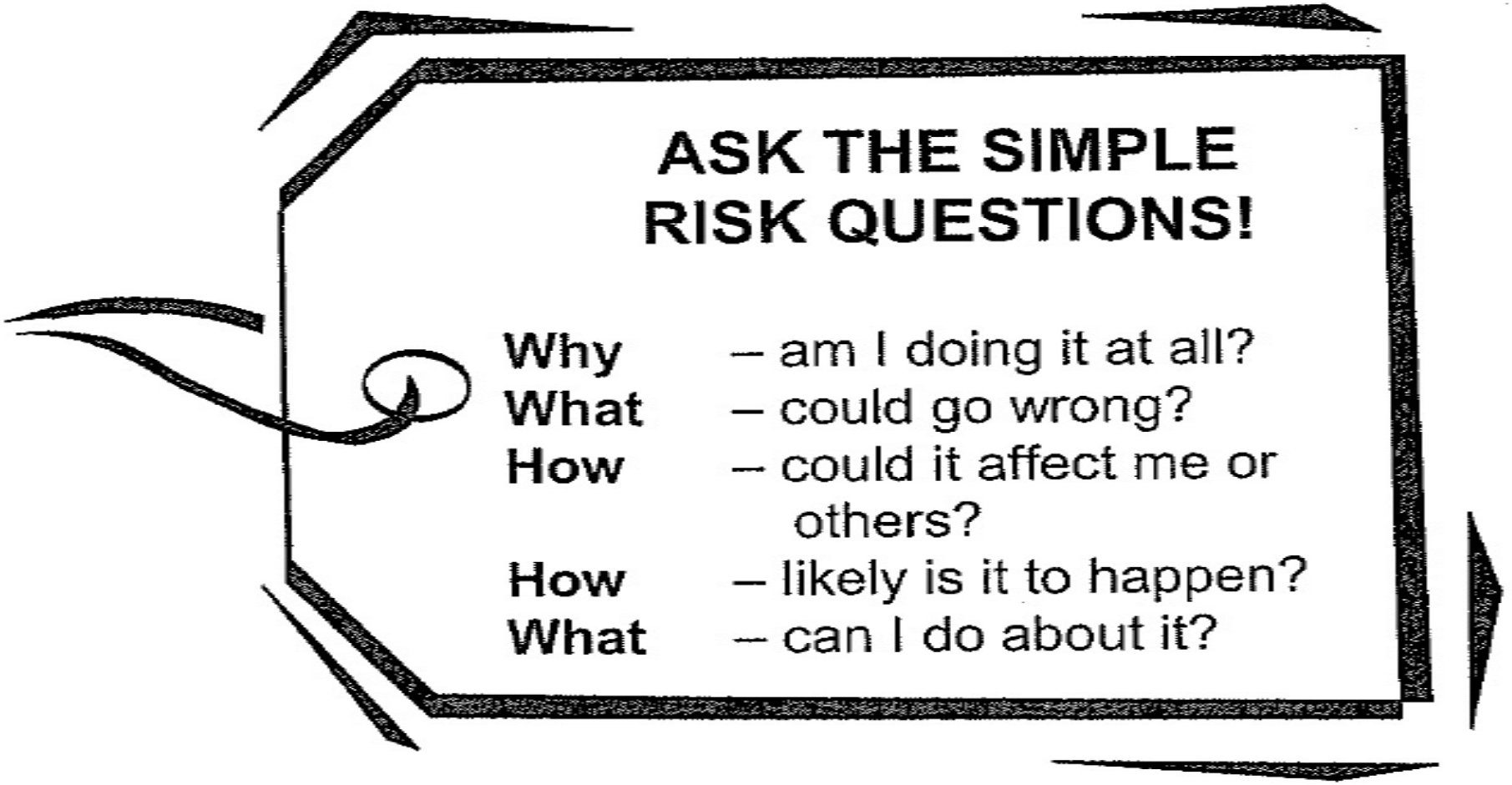
Risk Assessment

A risk assessment consists of identifying hazards and analyzing and otherwise evaluating the risks associated with exposure to those hazards after controls have been employed.

This risk assessment process begins with a well-defined description or definition of the risk.



Simplified Risk Assessment

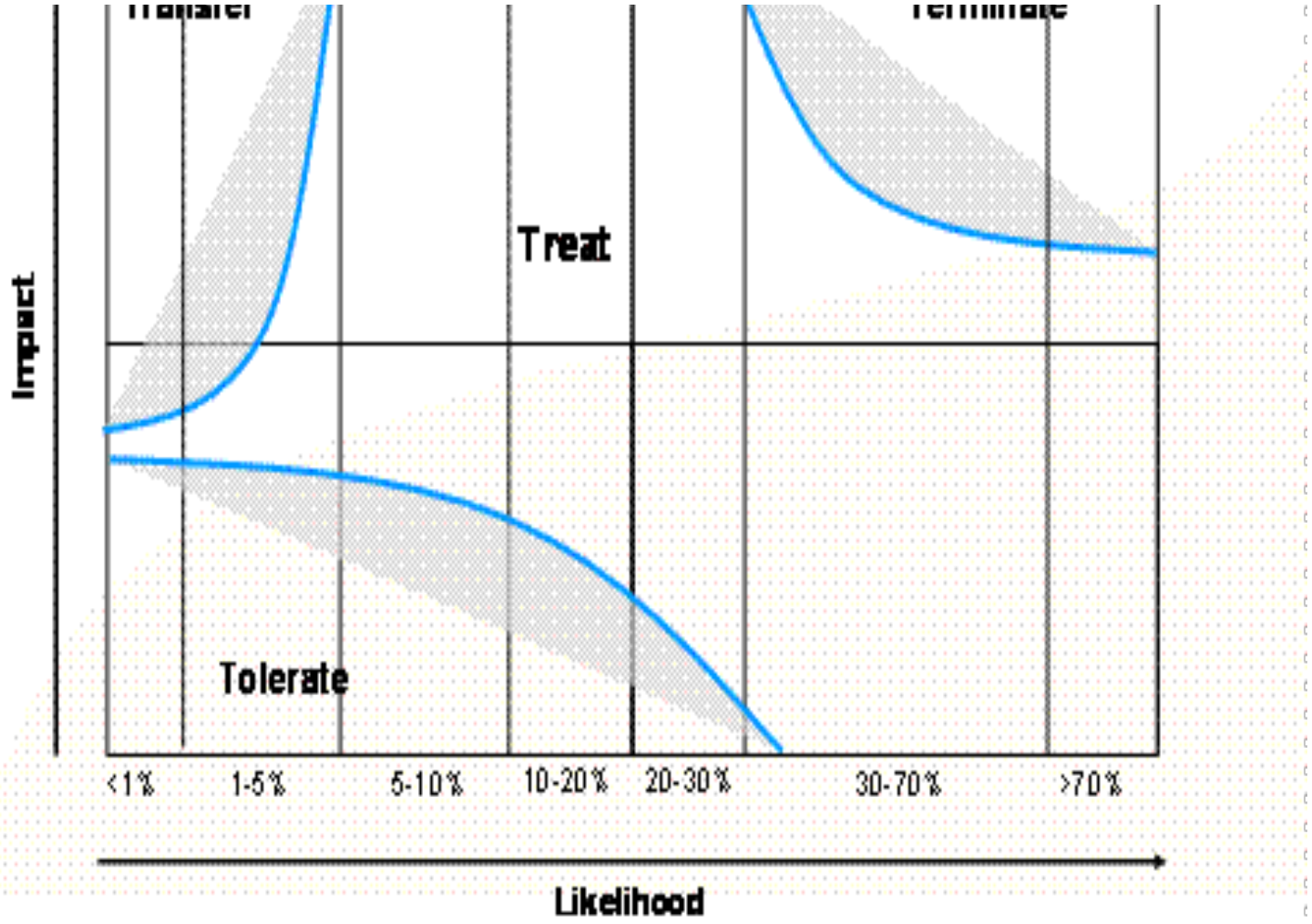


A Risk Assessment Matrix

Impact	Risk Management Actions		
Significant	Considerable management required	Must manage and monitor risks	Extensive management essential
Moderate	Risks may be worth accepting with monitoring	Management effort worthwhile	Management effort required
Minor	Accept risks	Accept, but monitor risks	Manage and monitor risks
	Low	**Medium**	**High**
		Likelihood	

Traditional views of workplace hazards, hazard controls, and risk management

Risk Control Strategies



What jobs result in accidents?

"Jobs with high task demands, and little control over how the tasks are to be completed, are the most likely to result in employee disability."

The real cause of accidents…

Workplace accidents are a result of:

- Human errors;
- Situational aspects; and
- Environmental aspects;

of the work and workplace.

Common causes of workplace incidents

Factors that cause/contribute to accidents

The systems approach – accidents occur because of the interaction between system components

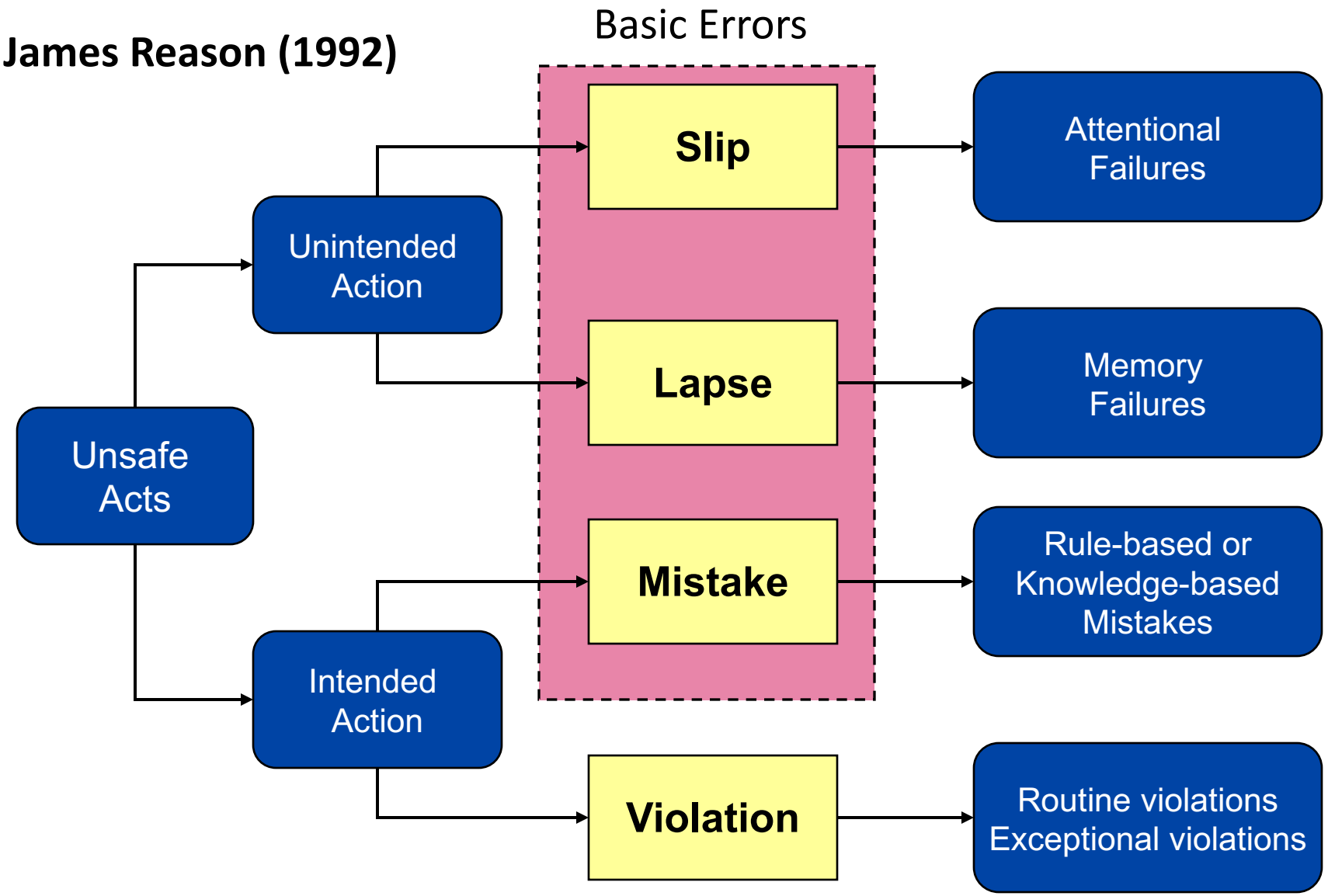
Direct causal factors in safety:

1. The employee performing a task
2. The task itself
3. Any equipment directly or indirectly used in the task
4. Other factors – social/psychological and environmental

Common causes of workplace incidents

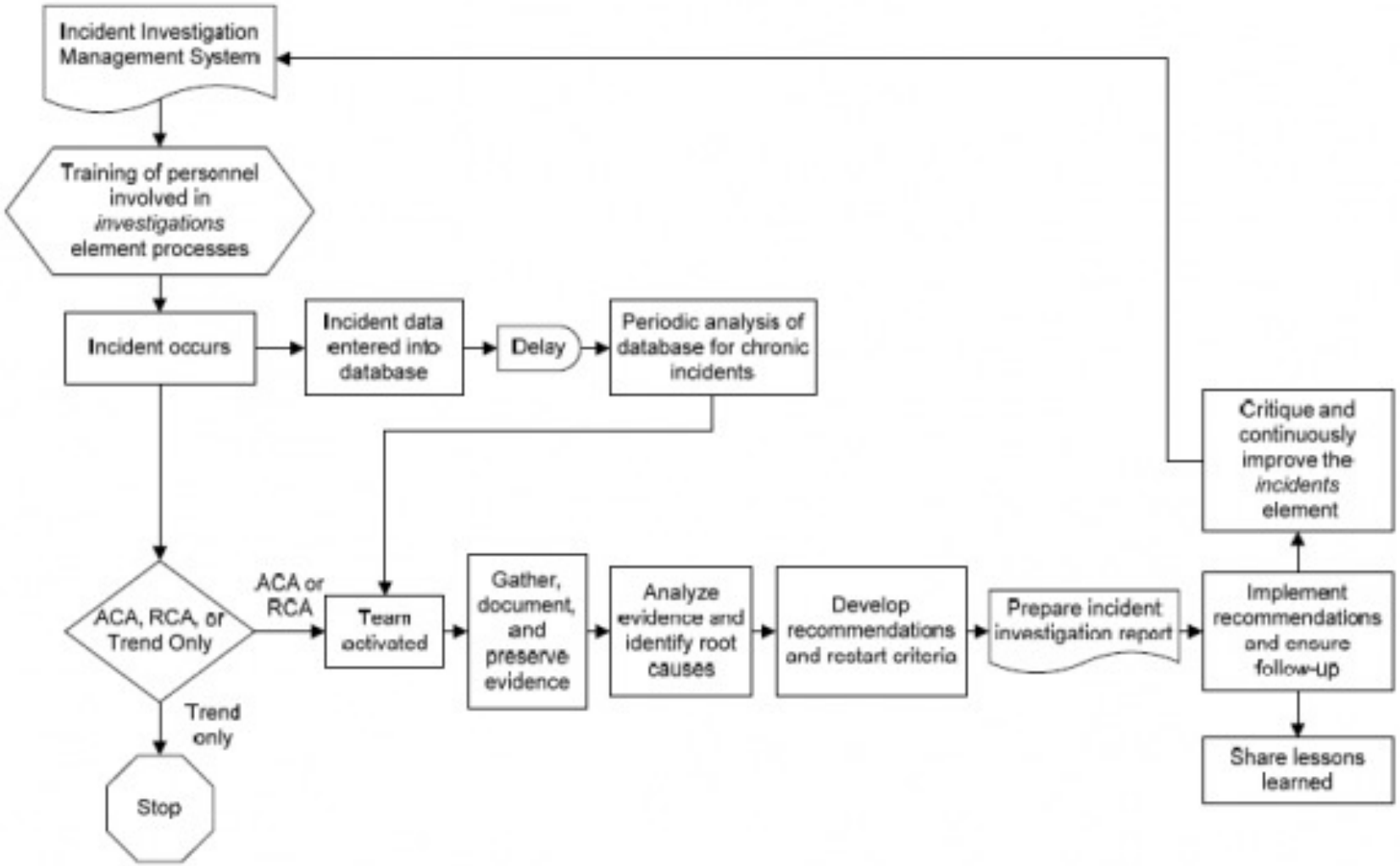
Human Error Taxonomy

James Reason (1992)



Common causes of workplace incidents

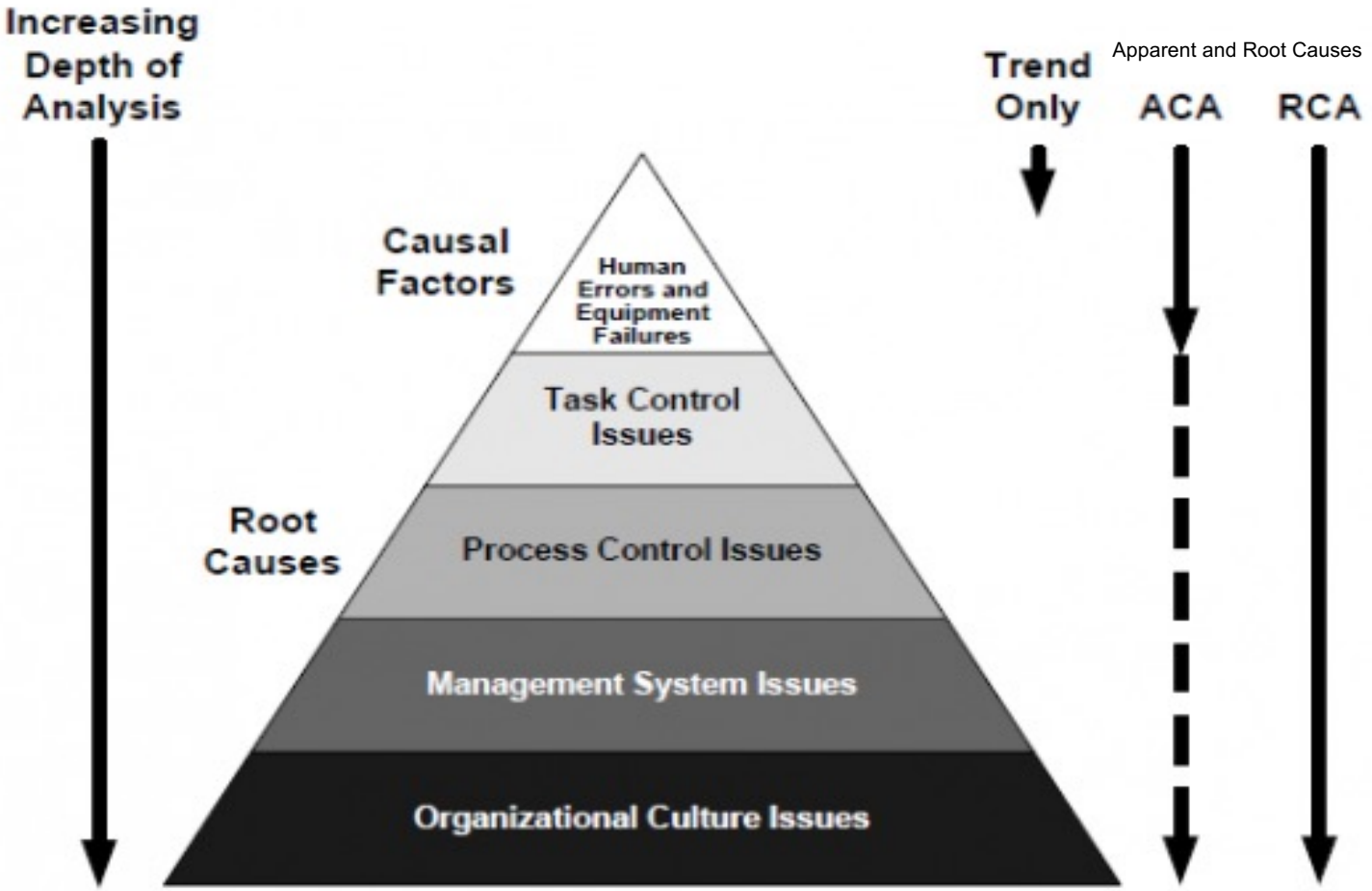
Why is Incident Investigation Important?



https://www.aiche.org/ccps/topics/elements-process-safety/learn-experience/incident-investigation/introduction

Common causes of workplace incidents

Why is Incident Investigation Important?



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Traditional View of Workplace Incidents

Incident

Behaviour

2/4

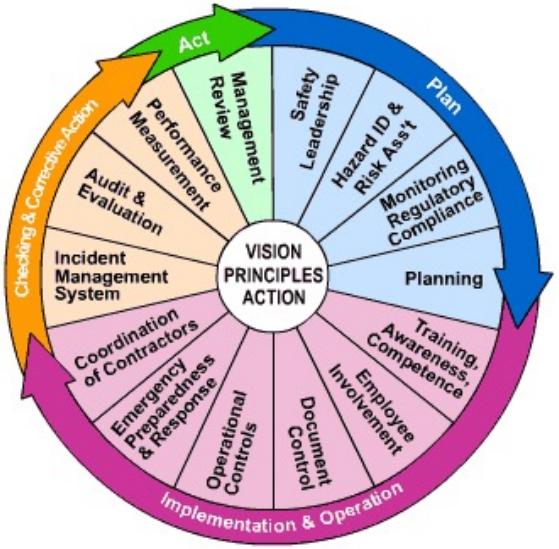
Systems Failure Causes of Workplace Incidents

Systems that impact workplace health and safety outcomes

OHSMS

(Occupational Health and Safety Management System)

- Company policy and management commitment
- Worker qualifications, orientation and training
- Hazard identification
- Hazard control
- Ongoing inspections
- Emergency response
- Incident investigation
- Modified Duties Program
- Measurement and continuous improvement
- Program administration



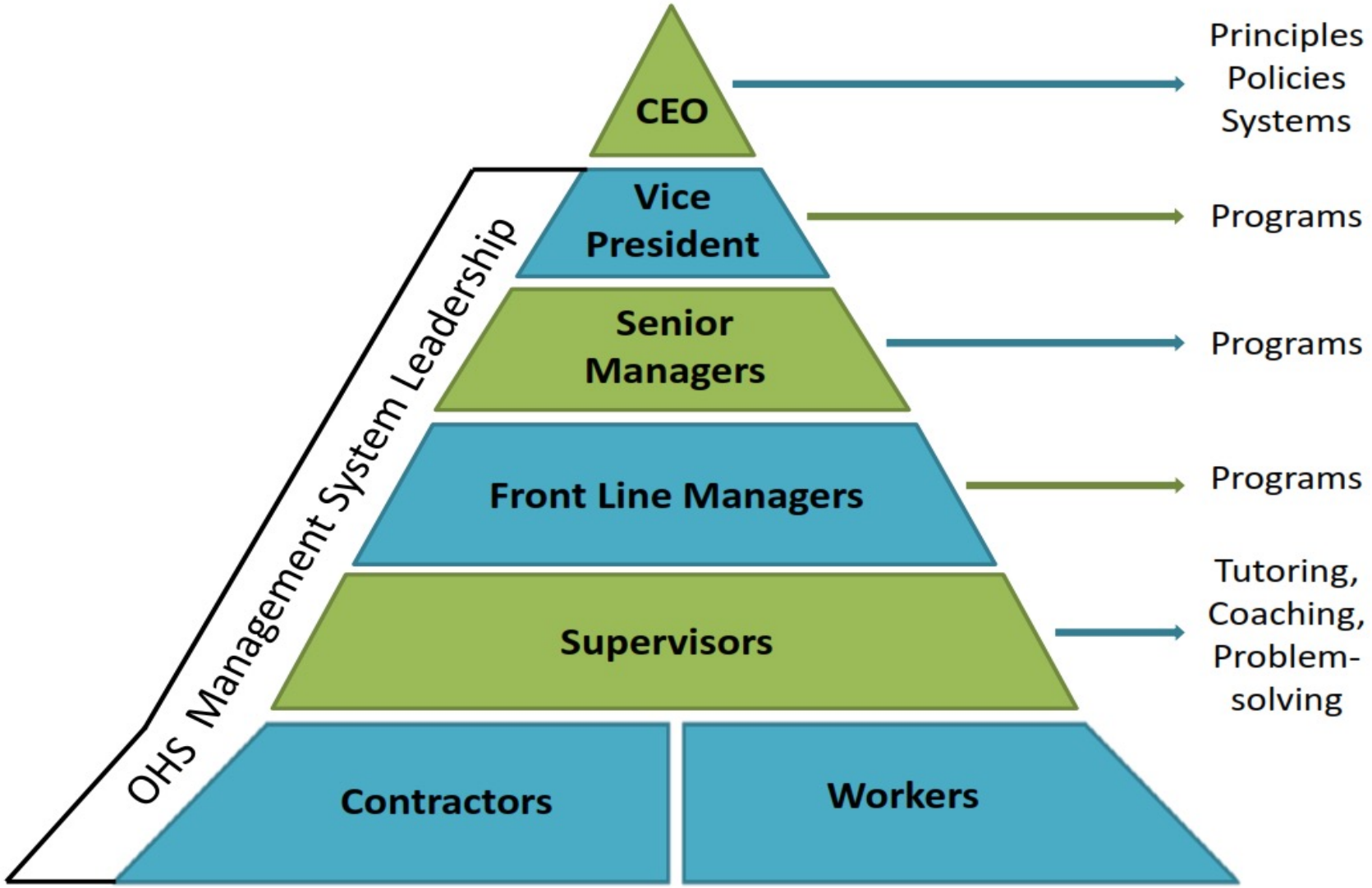
Human Resource Management System

HRMS consists of several program elements:

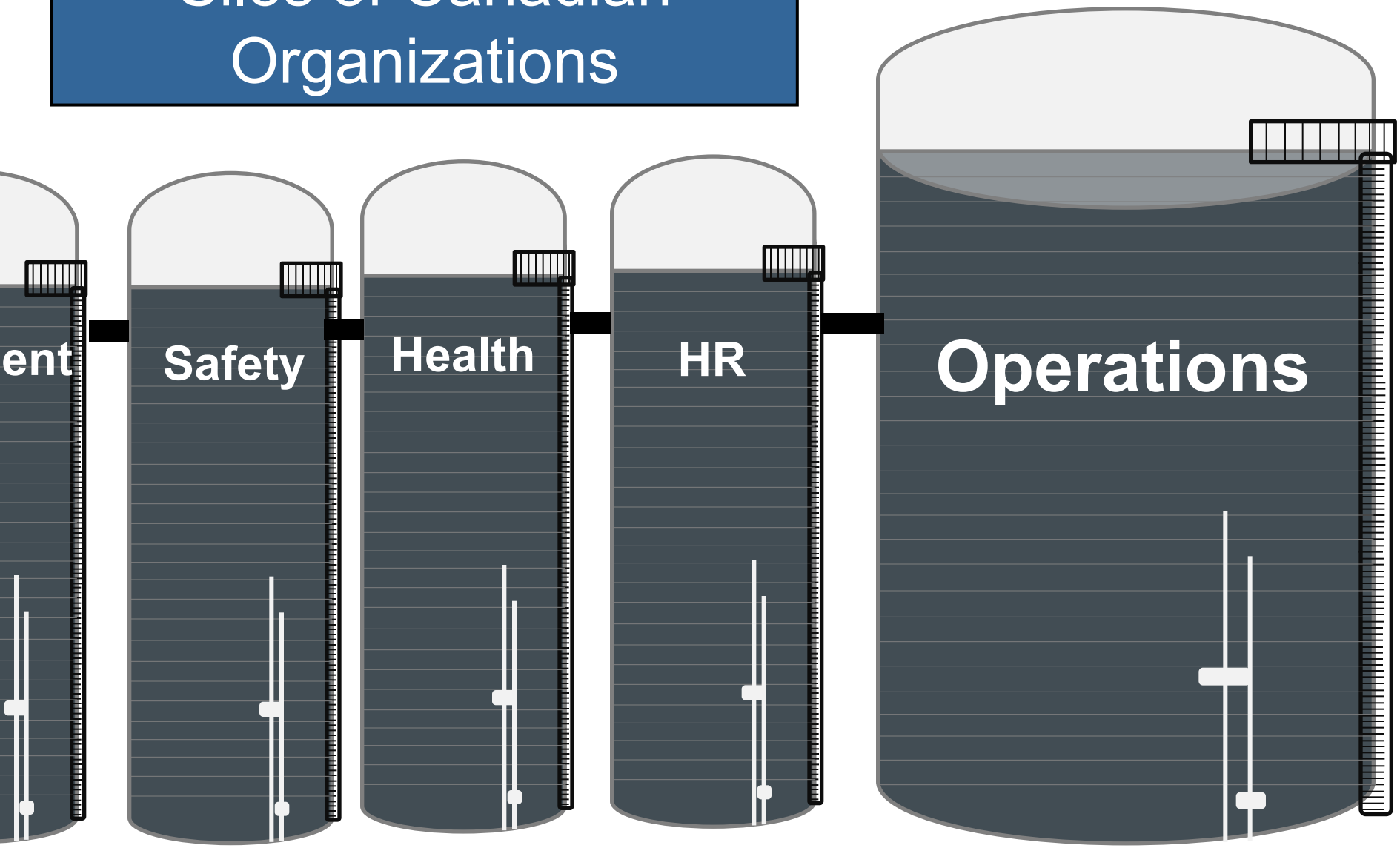
- Absence management
- Benefits
- Development and learning (on-the-job training, safety instructions, orientation)
- Incentives and compensation
- Payroll functions
- Performance evaluation and management
- Succession plans (typically only required for higher-ups)
- Talent recruitment and hiring
- Workforce planning and needs forecasting

Systems that impact workplace health and safety outcomes

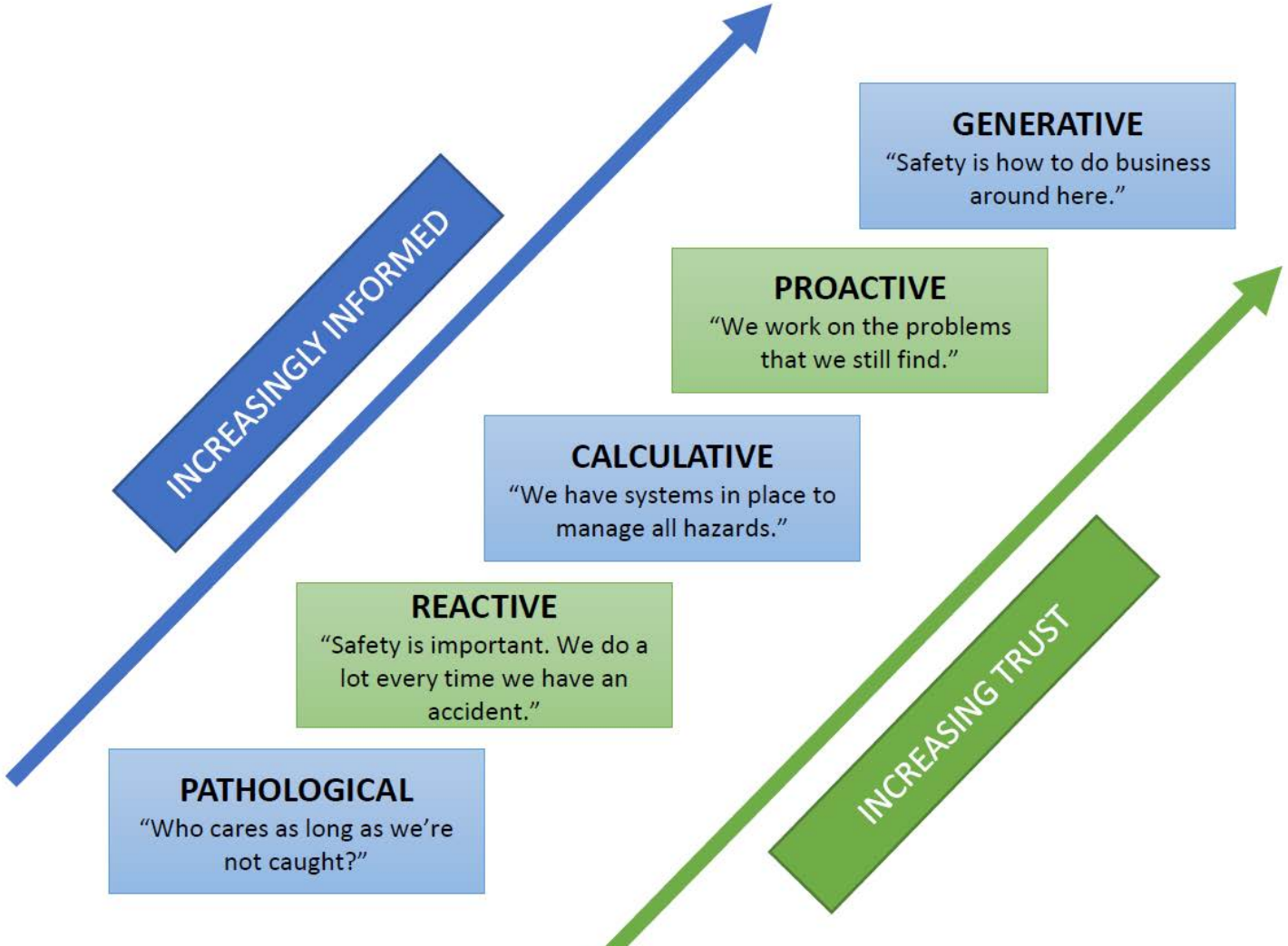
OHSMS Responsibility and Accountability



Silos of Canadian Organizations



Systems Thinking requires OHSMS Maturity



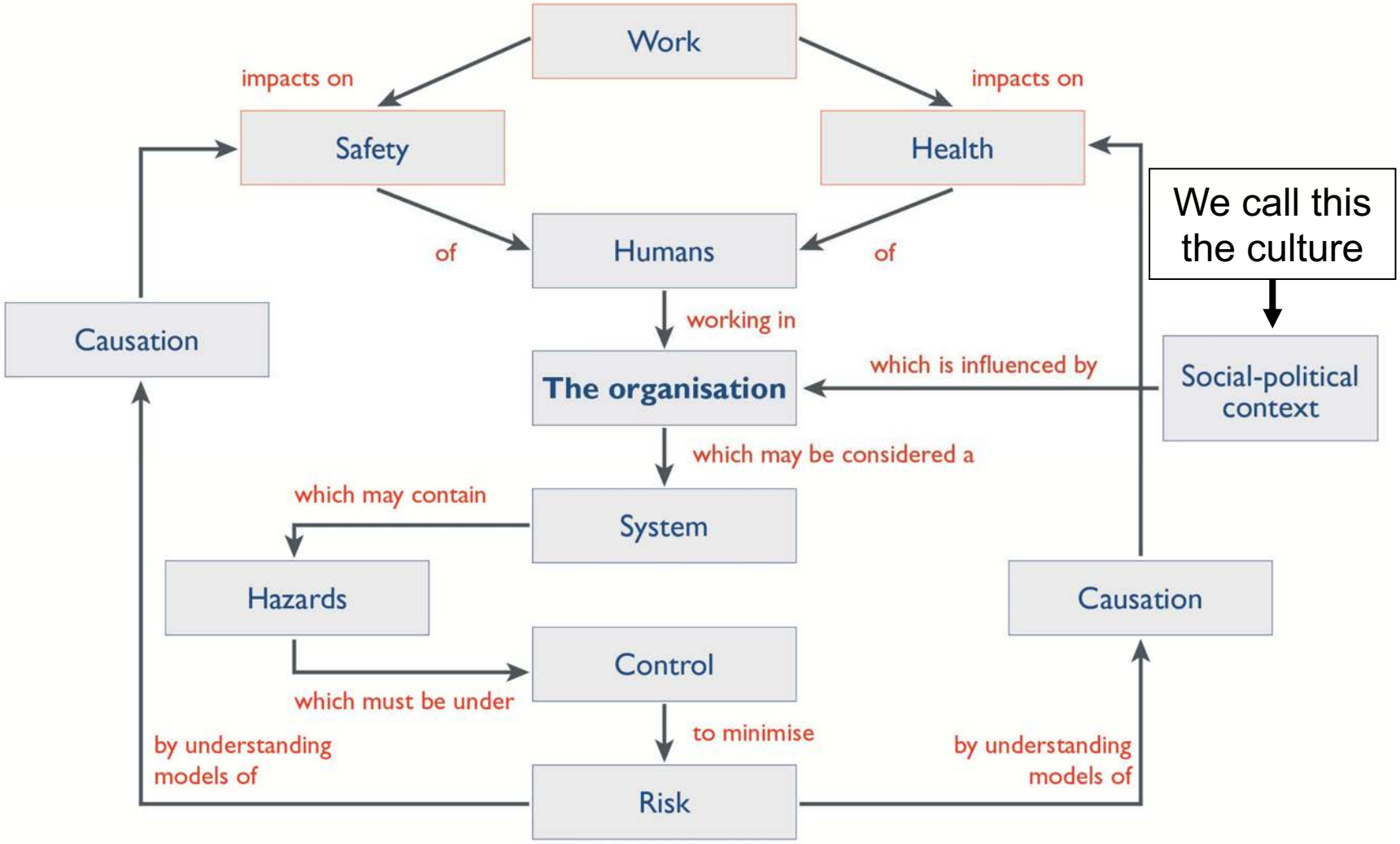
Modern View of Workplace Incidents

Incident

Behaviour

System Elements

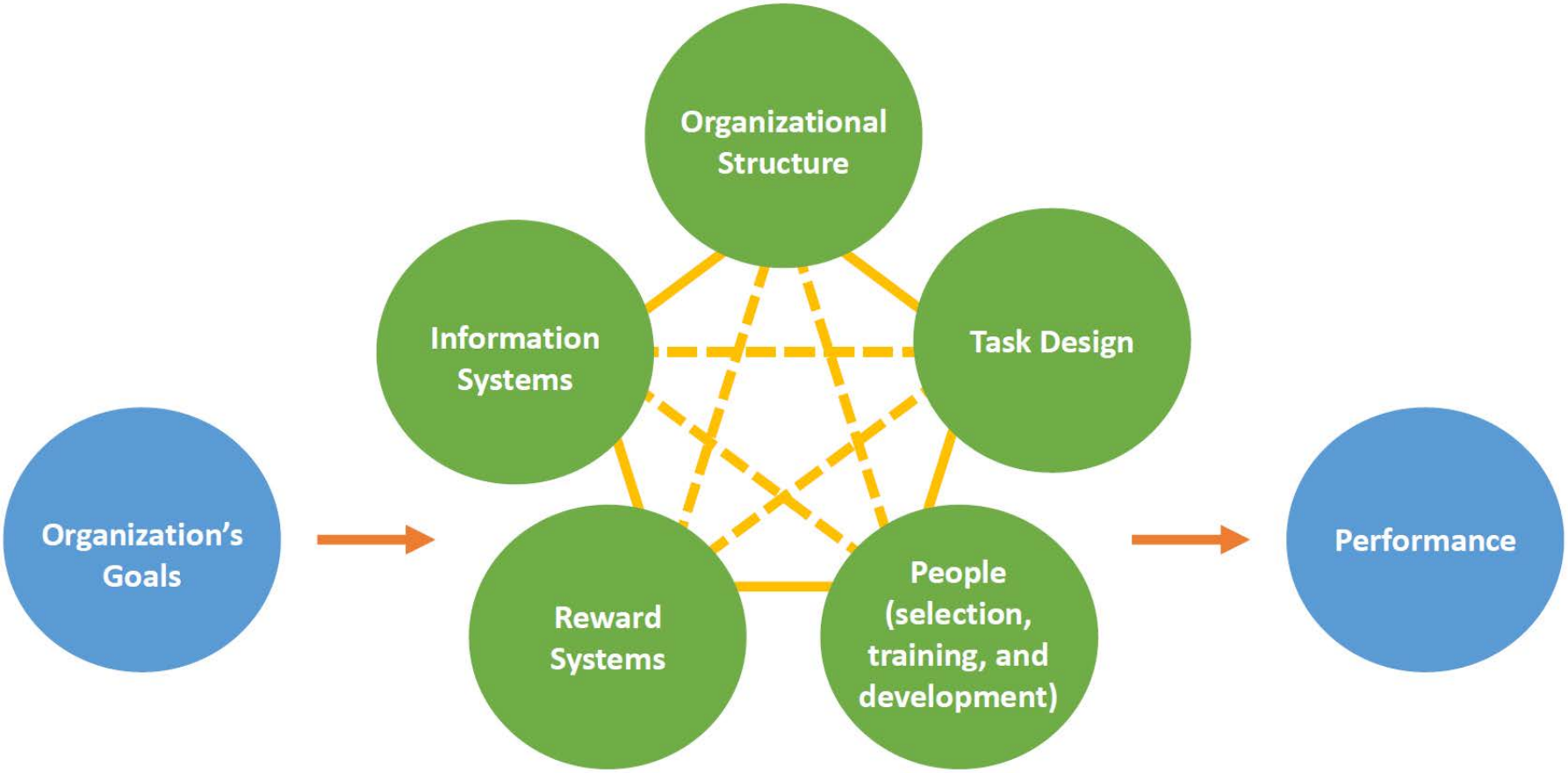
Why Causation Matters



http://www.ohsbok.org.au/wp-content/uploads/2013/12/32-Models-of-causation-Safety.pdf
Safety Institute of Australia

Systems Thinking to Achieve Safe Production

Work System Elements (WSE)



Case Study – Zamboni Driver Injured

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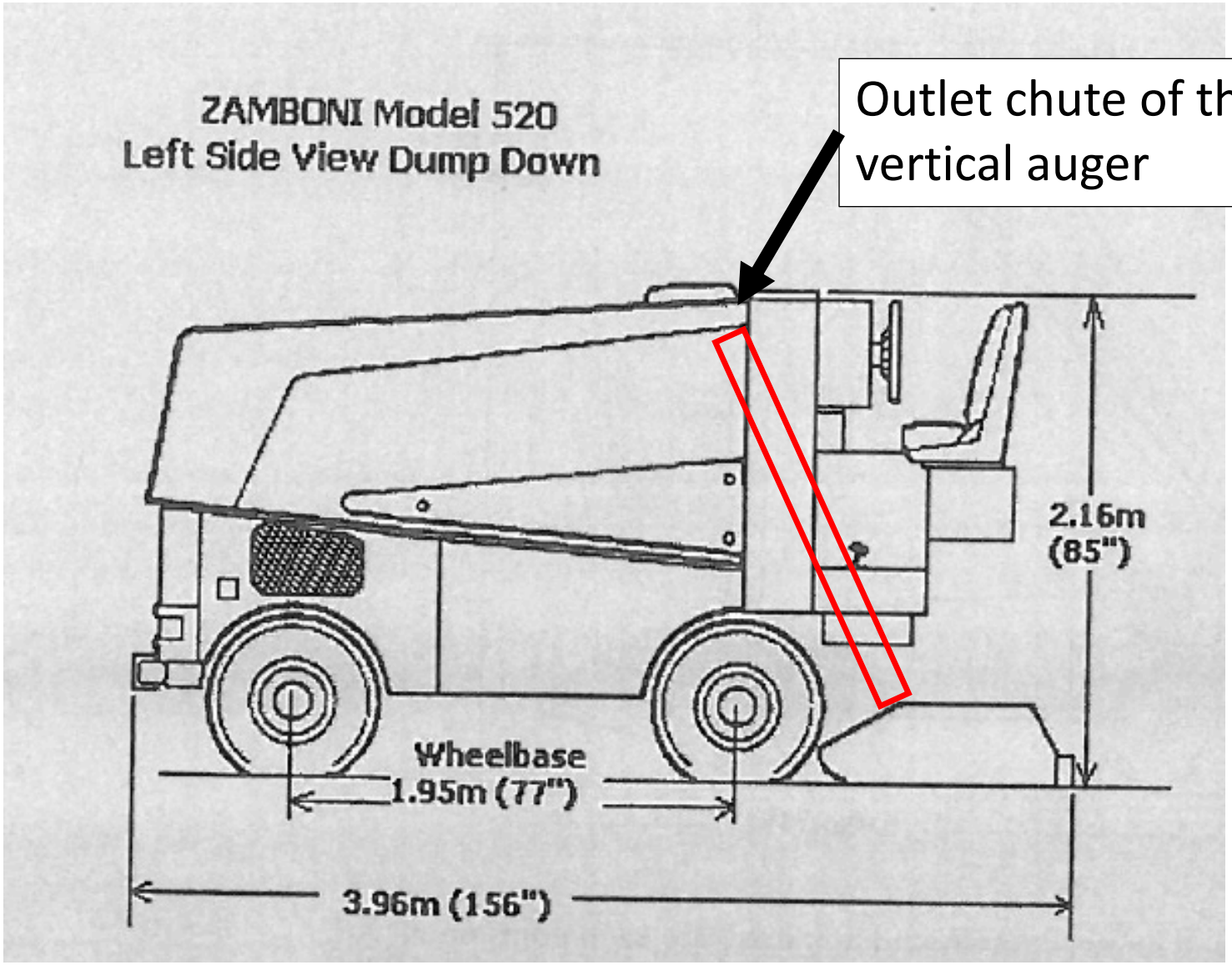
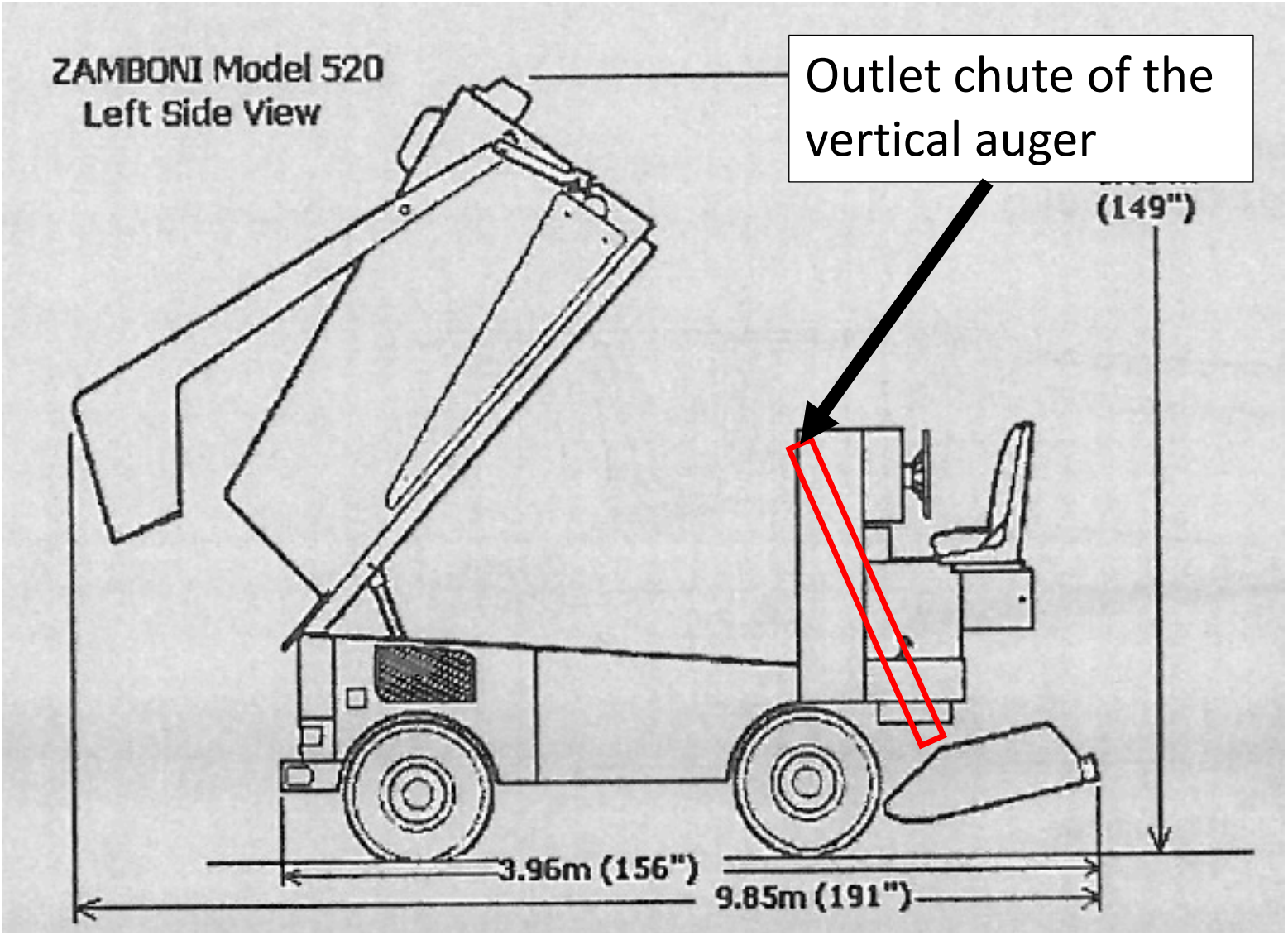


Case Study – Zamboni Driver Injured



Case Study – Zamboni Driver Injured

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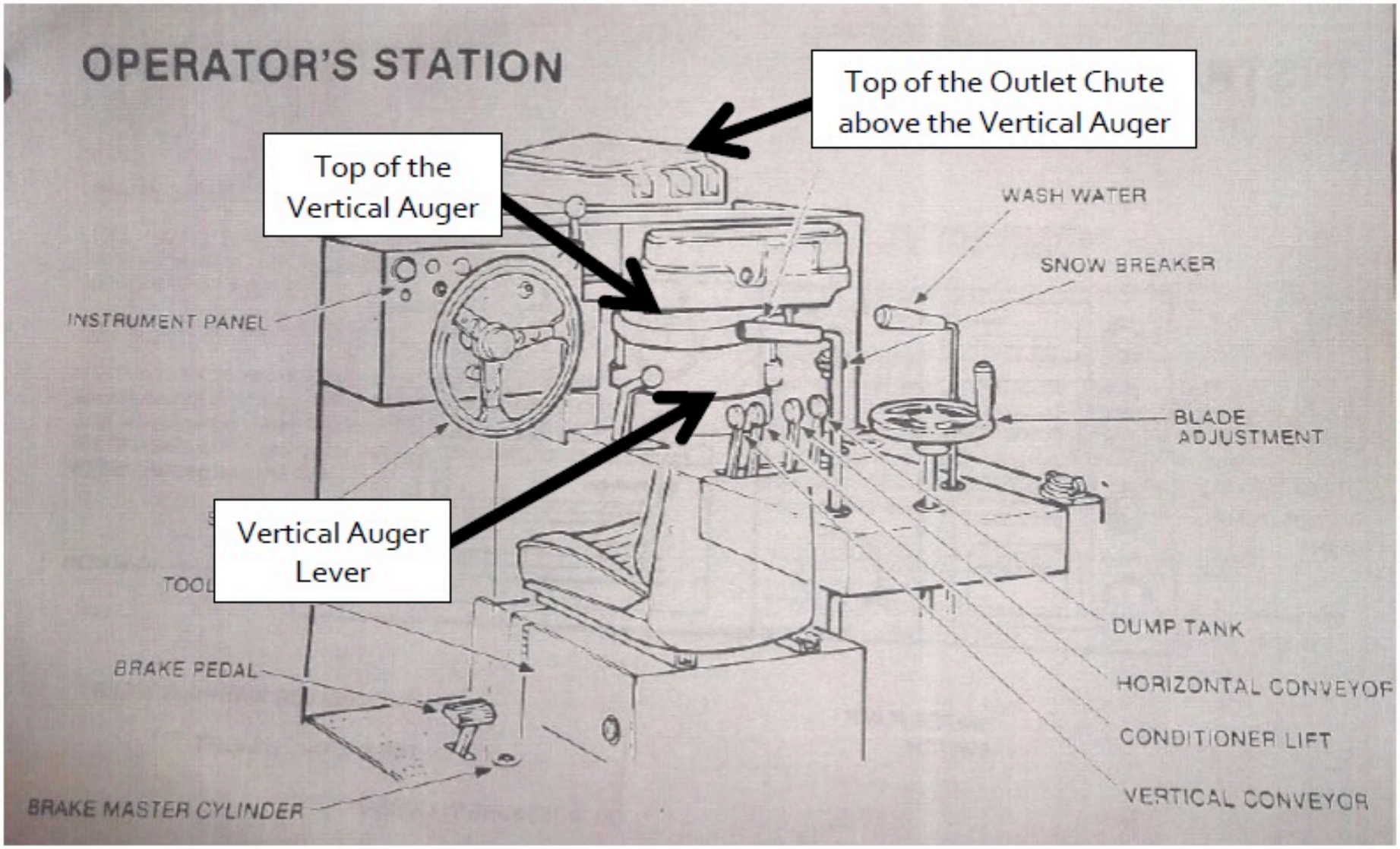


Modern View of Workplace Incidents

Incident

Behaviour

System Elements

Incident

Behaviour

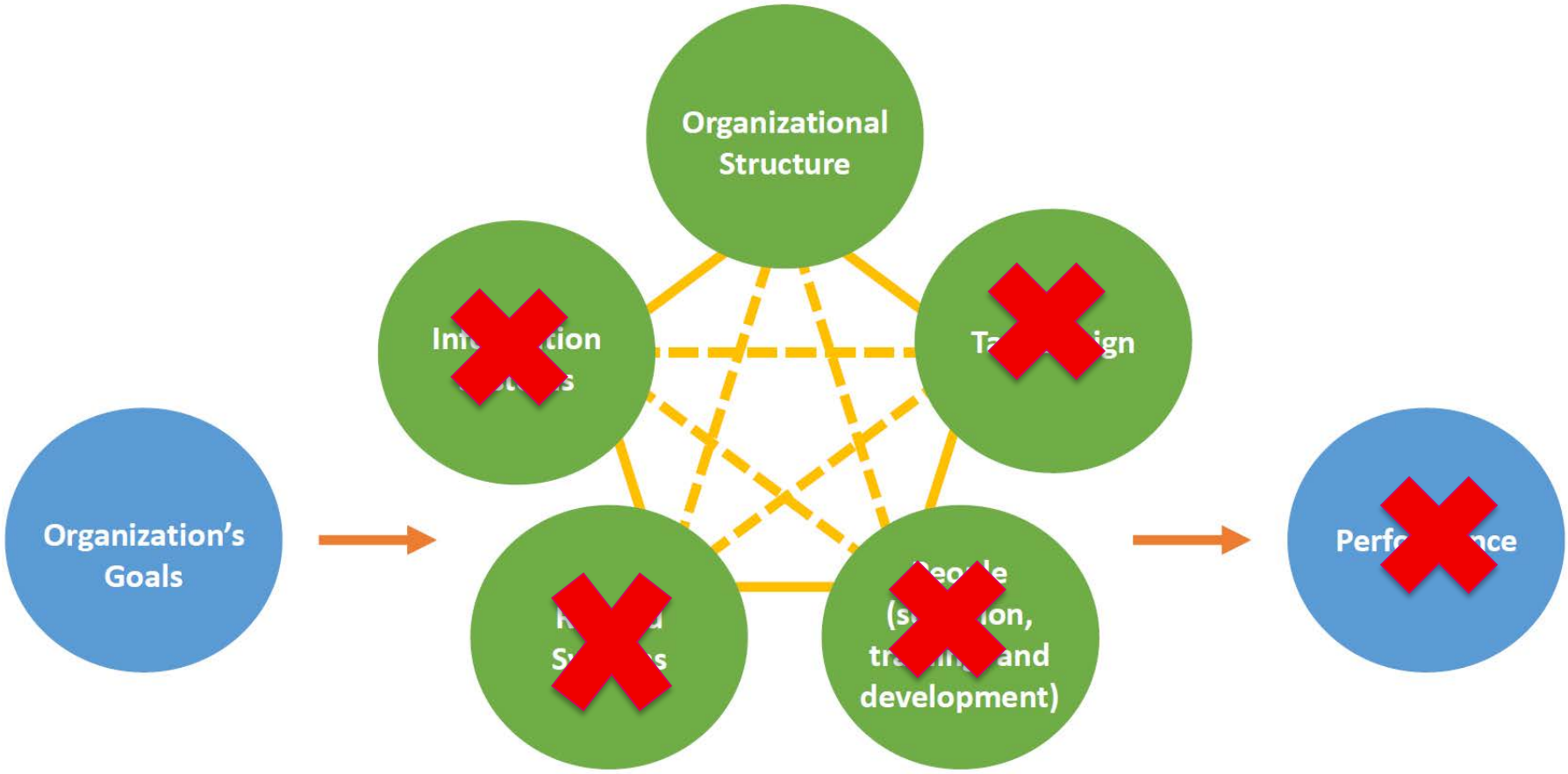
System Elements

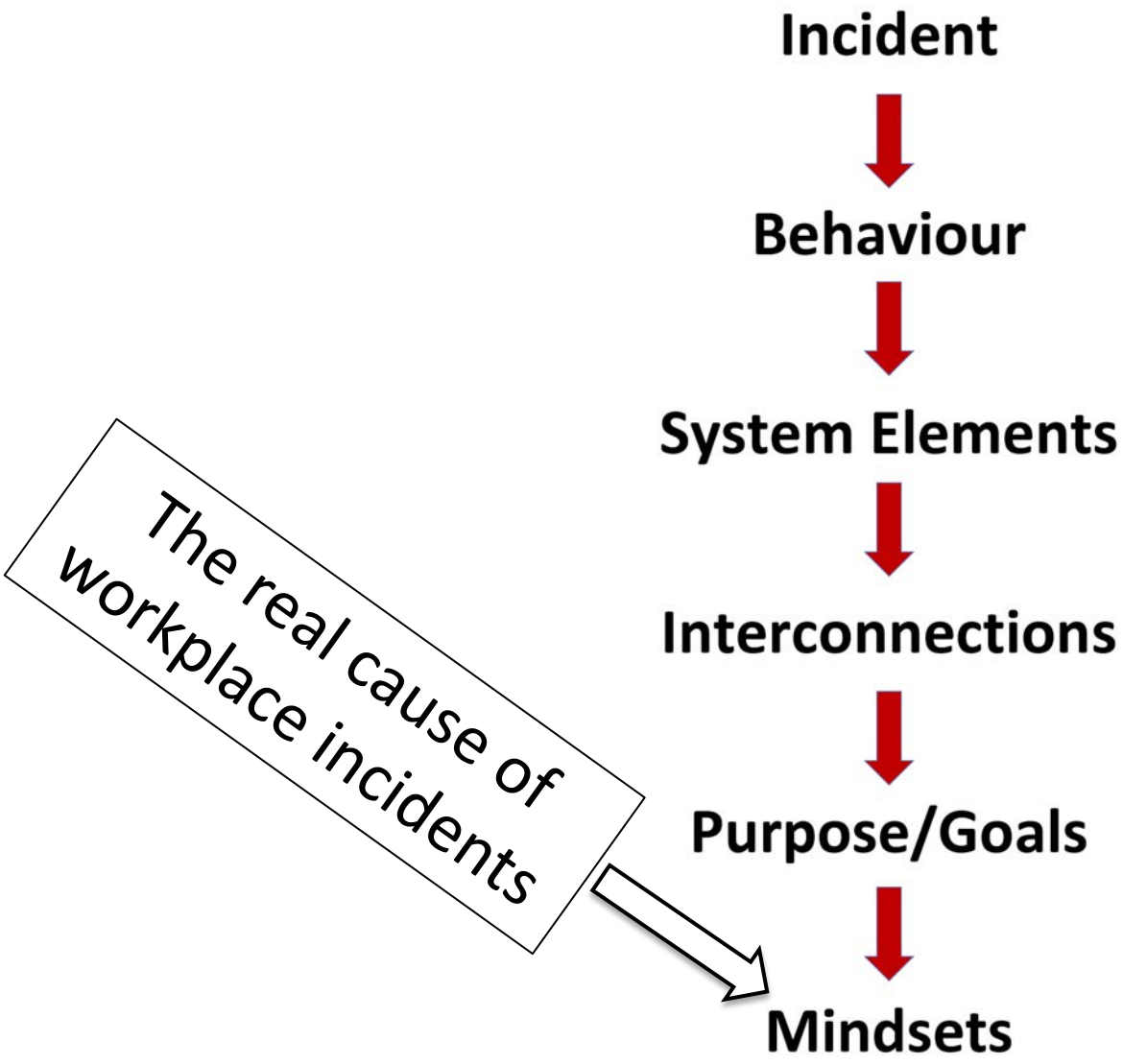
Interconnections

Interconnections

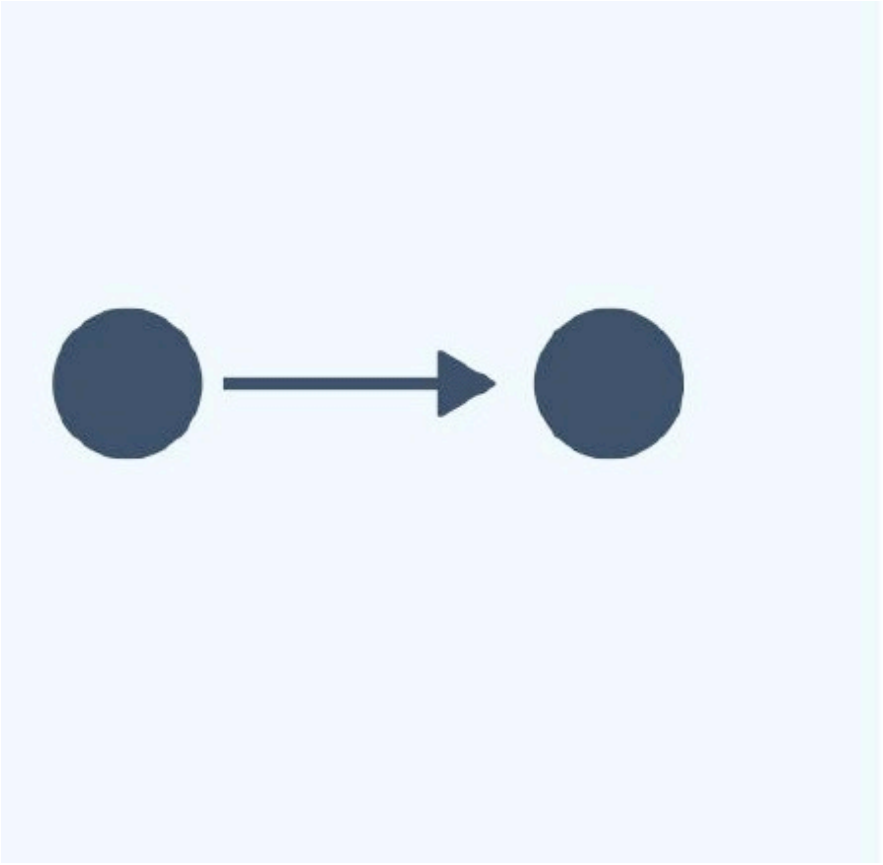
- Hiring
  - No review of work history
- The economy
  - Worker was out of discipline
- Worker Competency
  - No education or training
- Management leadership
  - No procedures in place
- Management oversight
  - Management unaware of work processes at the arena
- Work and Operations Scheduling
  - No provision for delays due to overtime

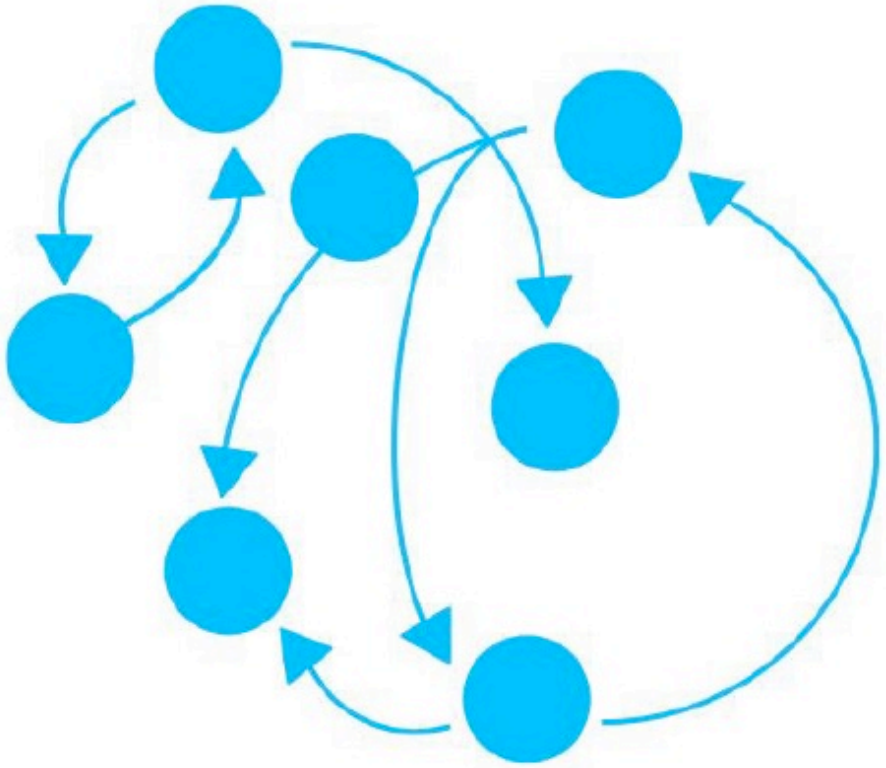
Inter-connections



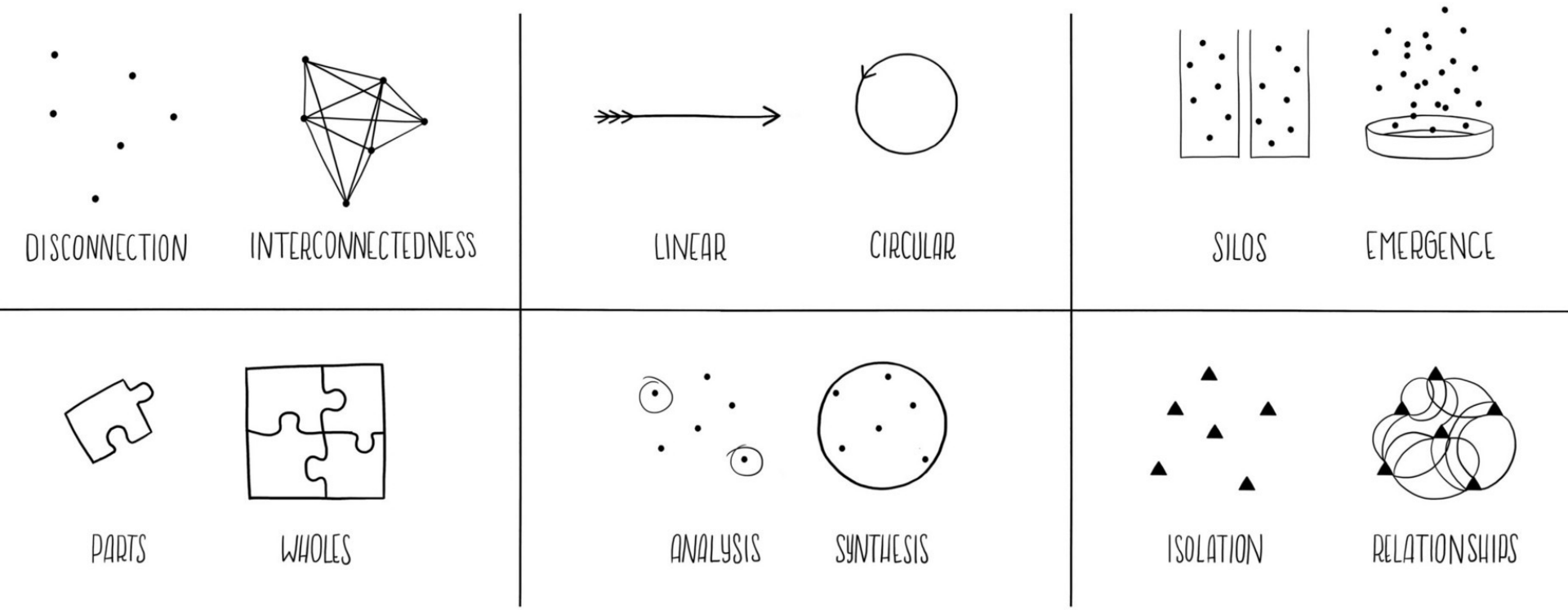

Incident
Behaviour
System Elements
Interconnections
Purpose/Goals
Mindsets
The real cause of workplace incidents

Traditional versus Systems Thinking

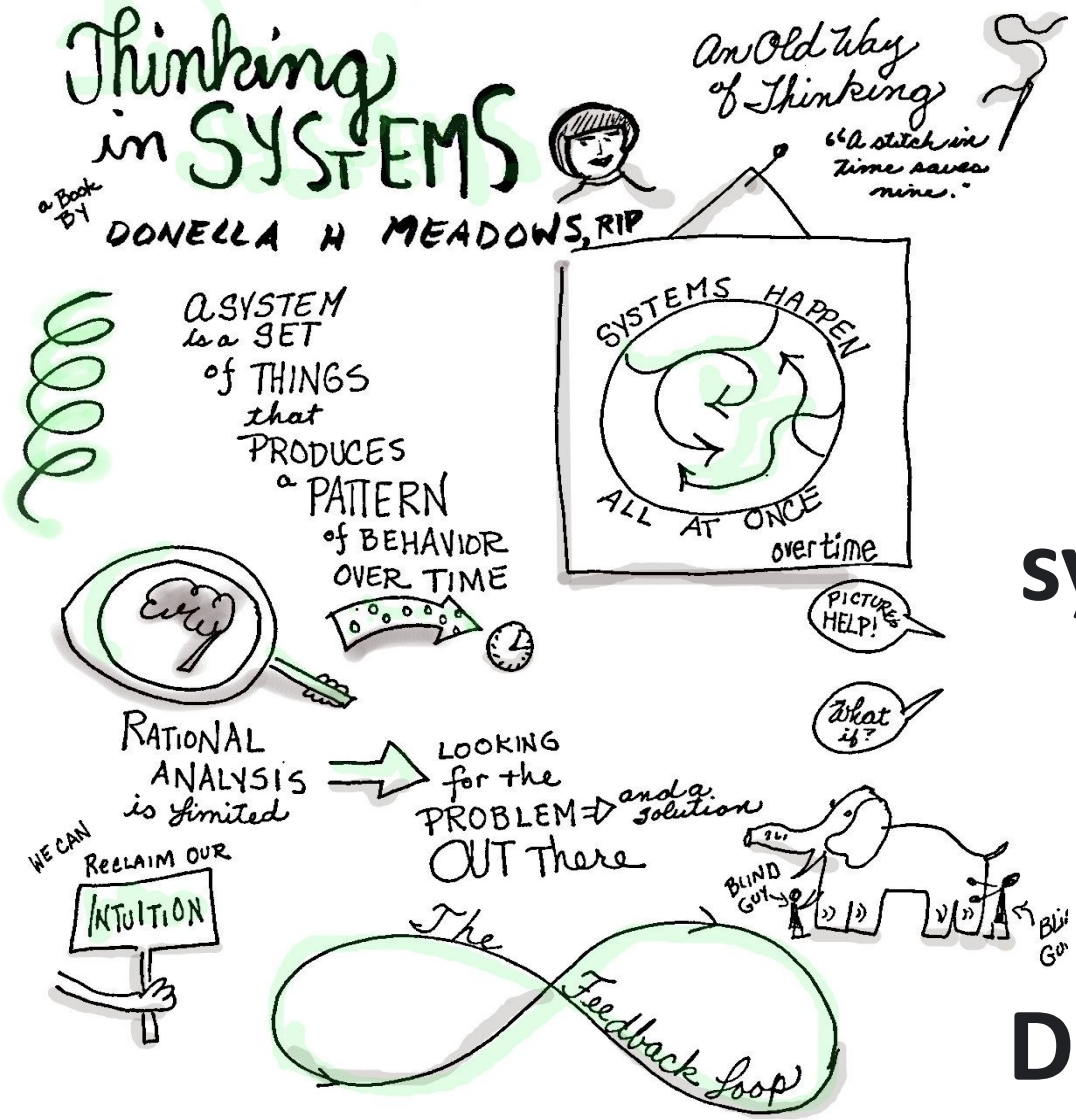




TOOLS OF A SYSTEM THINKER



Hierarchy versus Networks



Want to learn more about systems thinking?

Google

Donella Meadows systems thinking

Thank you!

For more information please go to:

https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public