



Building a Risk Management Information System (RMIS): A Deep Dive into Analyzing Contributing Factors and Mitigating Factors Through Incident Database Tracking and Analytics Tools



Introduction

Rick Curtis

Pronouns: he, him, his

Land Acknowledgement

Director, Princeton University Outdoor Action Program

Founder: **www.IncidentAnalytix.com**

Founder: **www.OutdoorEd.com**

Author: **The Backpacker's Field Manual**



Introduce Yourself

Name

Pronouns

Program Type

What is your role

Any goals you have

Format

- Presentation
- Small Group Work
- Hands-on Experience with a Risk Management Information System
- Sharing your Knowledge
- Questions - throughout
 - Parking Lot
- Discussion - throughout
 - Parking Lot



Always maintain your personal safety

Discussing and analyzing incidents and incident causation can be triggering for people.

Keep your own personal safety in mind at all times as well as the safety of others in the room.

If at any point you feel uncomfortable, take a safety break.

If you feel unsafe, let me know if there is anything I can modify in my presentation.



Guidelines

What is discussed here regarding specific incidents or personal stories stays in this room.

Real names should not be used except when they refer to situations that are clearly in the public domain (ex. Larry Nassar)

We are here to create safer programs, not to assign blame.



Learning Objectives

- Understand the **Systems Thinking Approach** to risk management
- Learn how the **Safety-I** framework and **Safety-II** framework are complementary parts of an overall risk management plan
- Learn how a **Risk Management Information System (RMIS)** can provide rich data for implementing Safety-I and Safety-II principles
- Learn how to assess your program by building **AcciMaps** and **PreventiMaps**

Concepts



Systems Thinking



Safety-I



Safety-II



Terminology

- **Safety Science** - concerned with finding and understanding the causes of adverse incidents and accidents and discovering ways to prevent them
- **Domains/Subdomains** – the industry/work setting where you operate (health care, aviation, outdoors – therapeutic adventure vs college outdoor program)

Terminology

- **Socio-technical System** – a system where there are many different components interacting to create the outcome/goals (people, technology, tools, transportation, environment, etc.)
- **Taxonomy** – the practice of classification of things or concepts. Related to the Domain.

Terminology

- **Incident/Event** – Something that occurred
 - **Accident** – an event with some adverse outcome
 - **Close Call** – an event with the possibility of an adverse outcome but none occurred



Diversity & Inclusion Risks

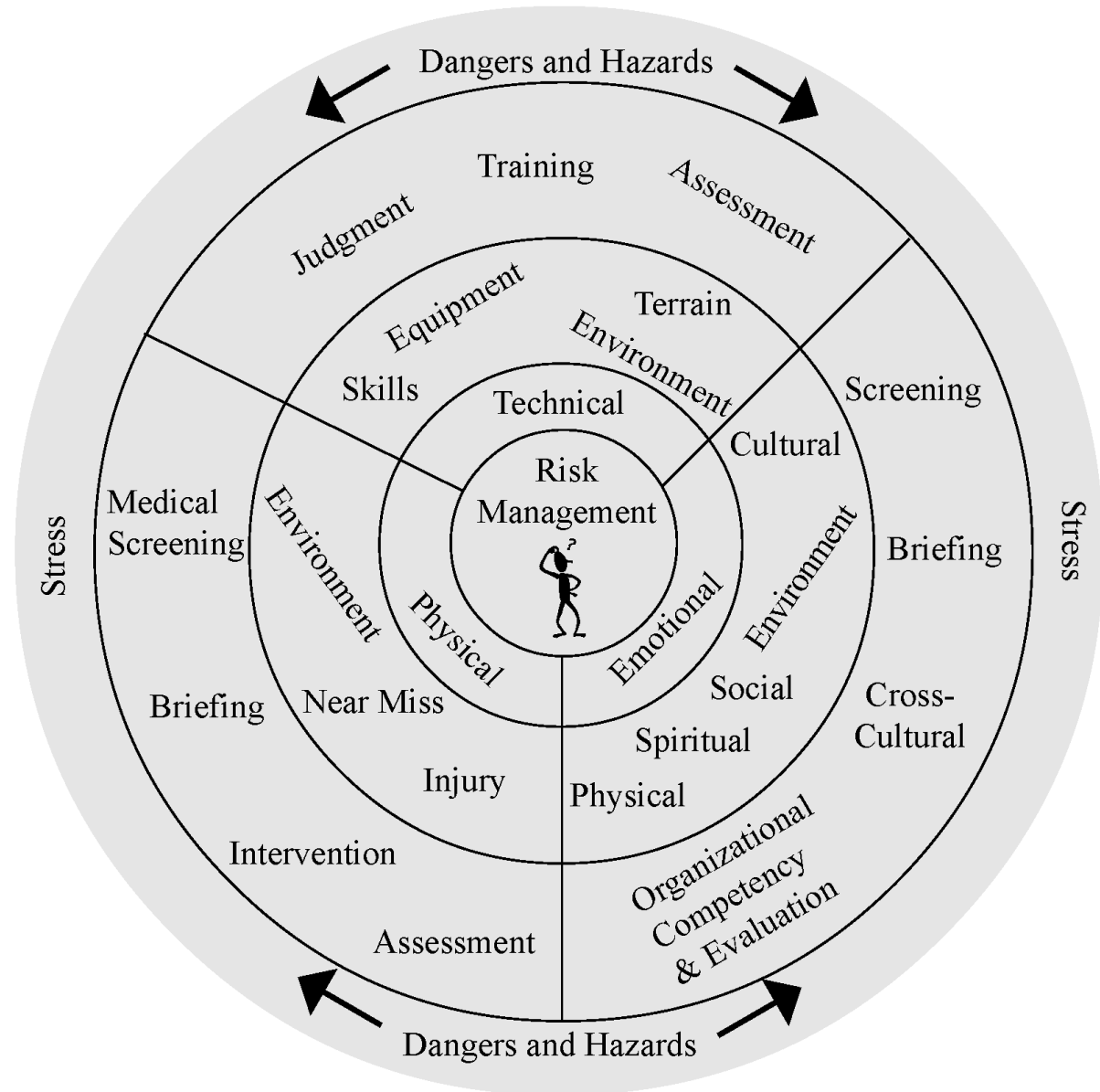
- **Physical Safety** is only one dimension on the Risk Management spectrum
- **Psychological/Emotional Safety** is equally important and Hazards can be equally life threatening
 - Teens committing suicide after bullying
 - LGBTQIA+ individuals being assaulted or killed
- Talk to your staff about where there are Psychological/Emotional Hazards, Assess the Risk Level, and establish the necessary guidelines, structures, protocols, and culture to manage the risk

Remembering our colleague Nina Roberts



<https://give.sfsu.edu/roberts>

Humanistic Model of Risk Management WRMC Proceedings 1997





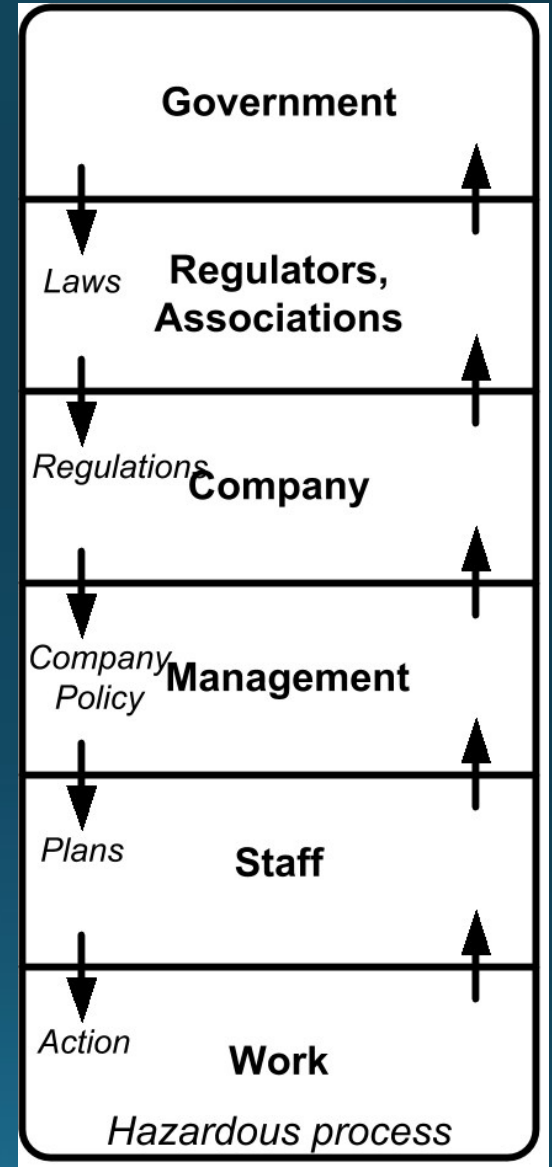
Concepts



**Systems
Thinking**


Systems Thinking

Risk Management in a Dynamic Society
Jens Rasmussen, Safety Science, 1997





<https://www.youtube.com/watch?v=5oYV3Dqe0A8>
SystemsThinking - A New Direction in Healthcare Incident Investigation



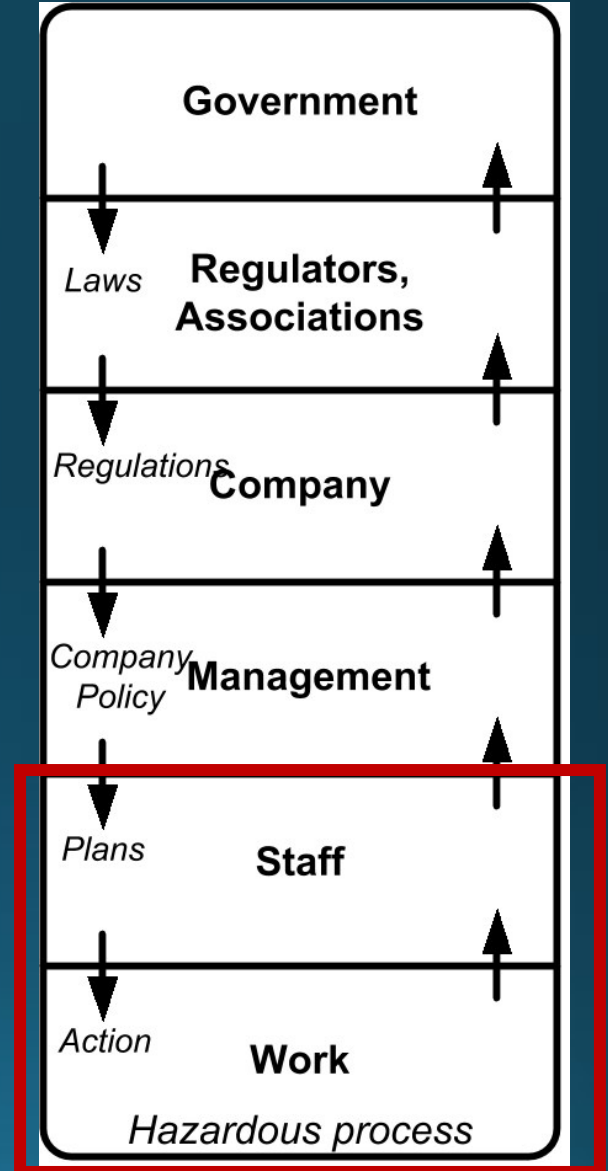
Systems Thinking

- **Near misses and adverse events are caused by multiple, interacting, contributing factors, not just a single bad decision or action.**
- **Behavior and safety is impacted by the decisions and actions of everyone in the system, not just individuals.**
- **Effective countermeasures focus on systemic changes rather than on individuals.**

Systems Thinking

Risk Management in a Dynamic Society
Jens Rasmussen, Safety Science, 1997

**Traditional Accident
Analysis focused here**



Concepts



**Systems
Thinking**



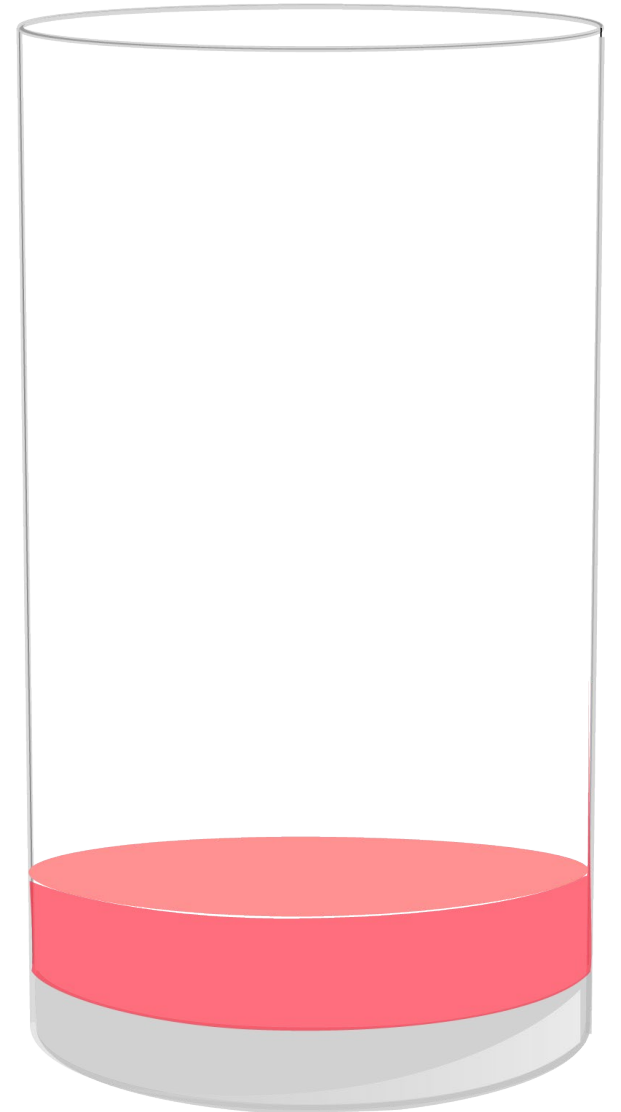
Safety-I

Safety-I

What's Going Wrong?

We are safe if there is as little as possible of this...

Hollnagel, E. Wears, R., Braithwaite, J. - *From Safety-I to Safety-II*
(A White Paper)



Safety-I

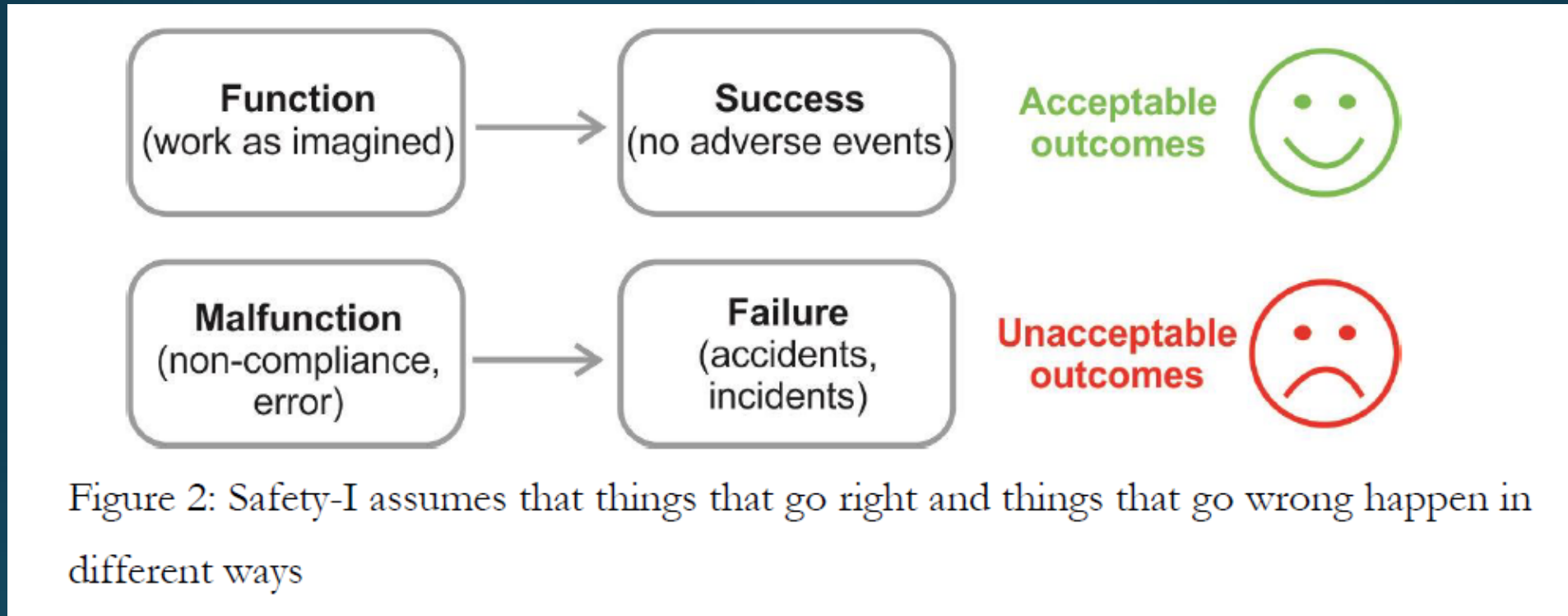


Figure 2: Safety-I assumes that things that go right and things that go wrong happen in different ways

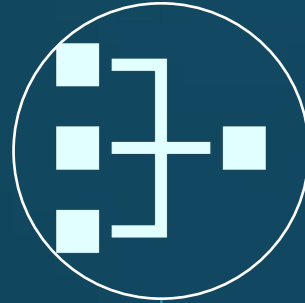
- 1. Hollnagel, E. Wears, R., Braithwaite, J. - EUROCONTROL (2013). *From Safety-I to Safety-II (A White Paper)*. Brussels.

	Safety-I
Definition of Safety	As few things as possible go wrong
Safety Management Principle	Reactive, respond when something happens or is categorized as unacceptable risk
View of Human Factors	Humans are predominantly seen as a liability or hazard. They are a problem to be fixed.
Accident Investigation	Accidents are caused by failures and malfunctions. The purpose of an investigation is to identify the causes.

Safety-I

- 1. Hollnagel, E. Wears, R., Braithwaite, J. - EUROCONTROL (2013). *From Safety-I to Safety-II (A White Paper)*. Brussels.

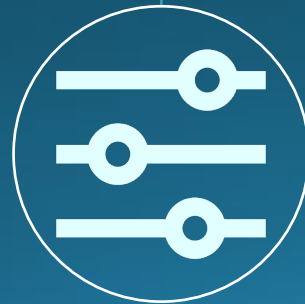
Concepts



Systems Thinking



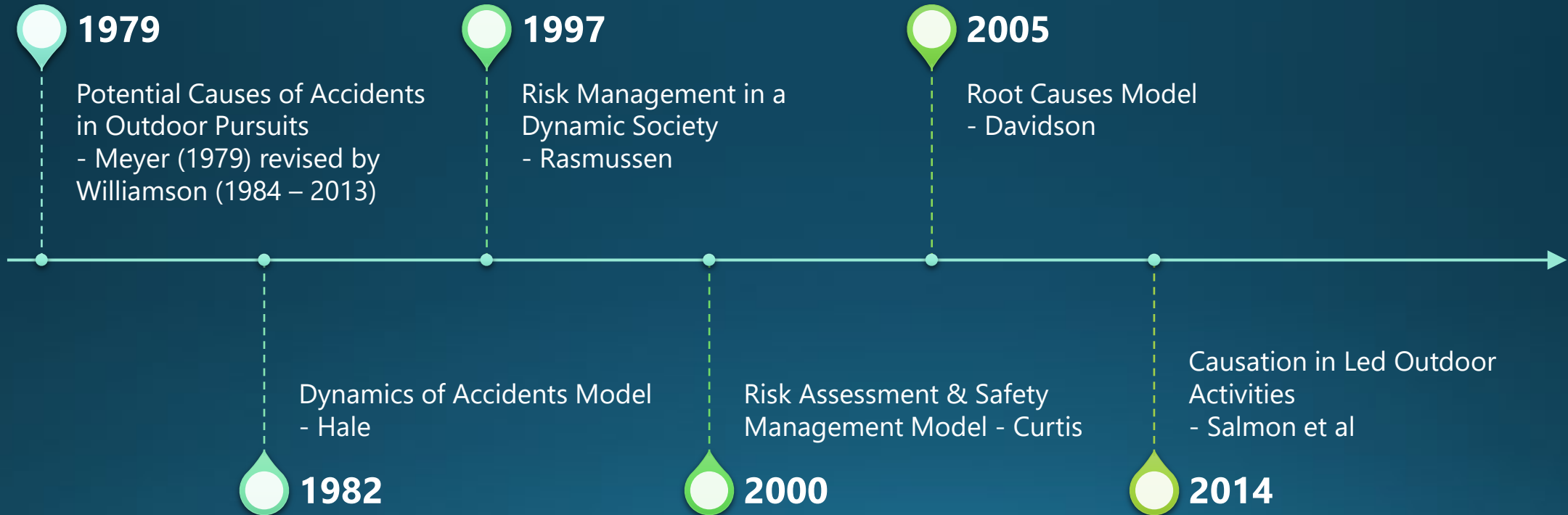
Safety-I



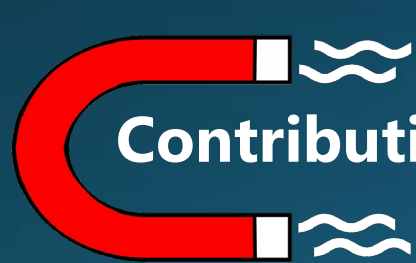
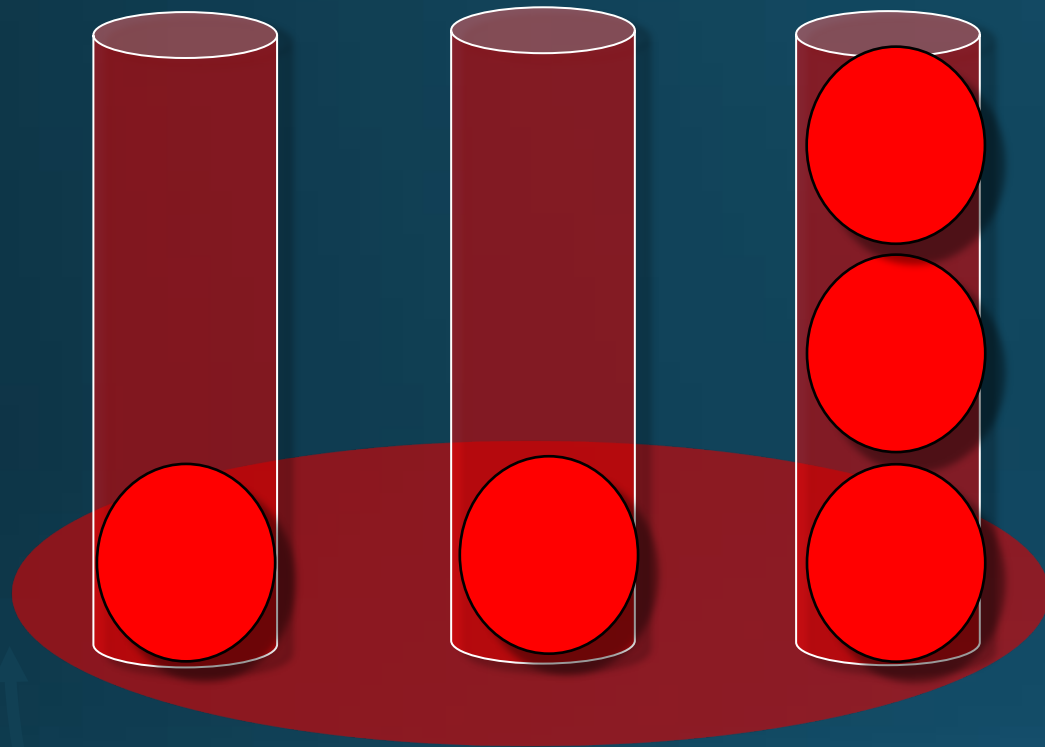
Contributing Factors

Taxonomy

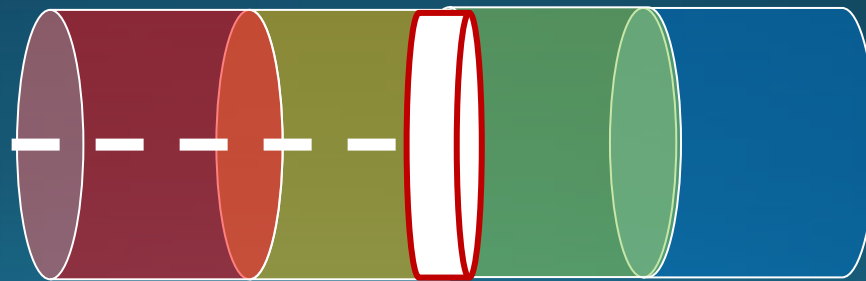
Causation Taxonomies for Outdoor Industry



Risk Assessment & Safety Management (RASM) Contributing Factors



Contributing Factors ←

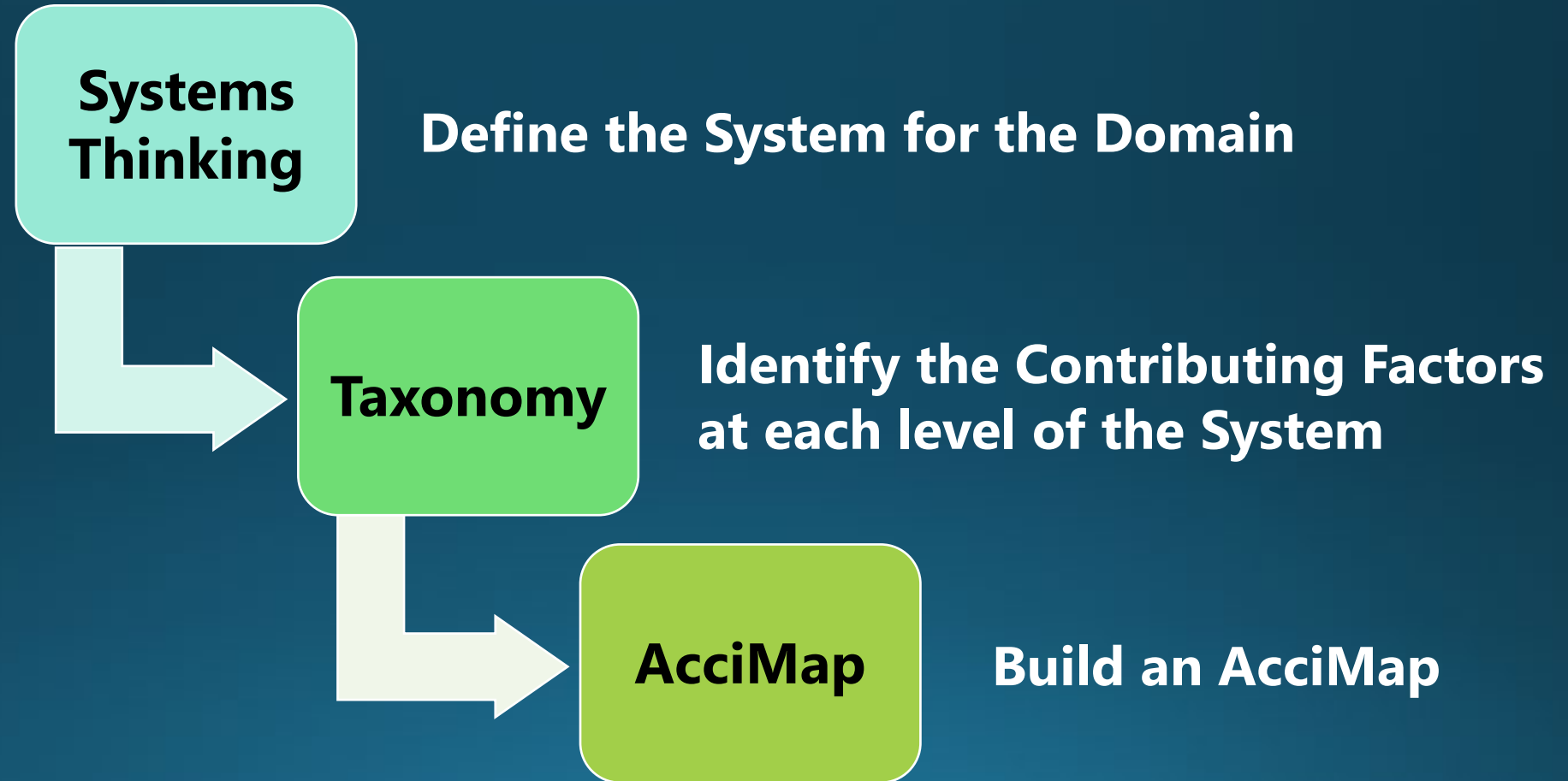


High ←

— — — — —
Risk Level

→ Low

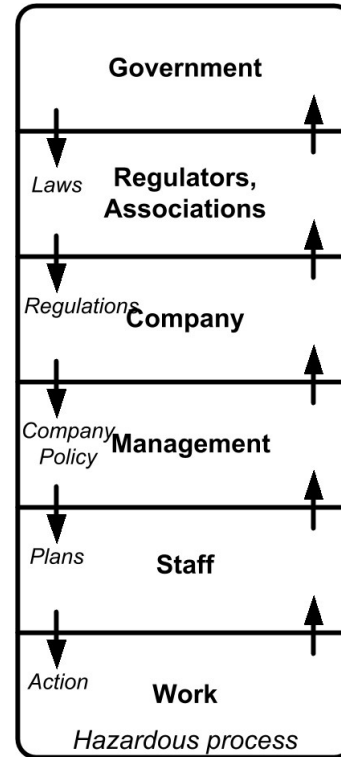
Rasmussen's AcciMap Approach



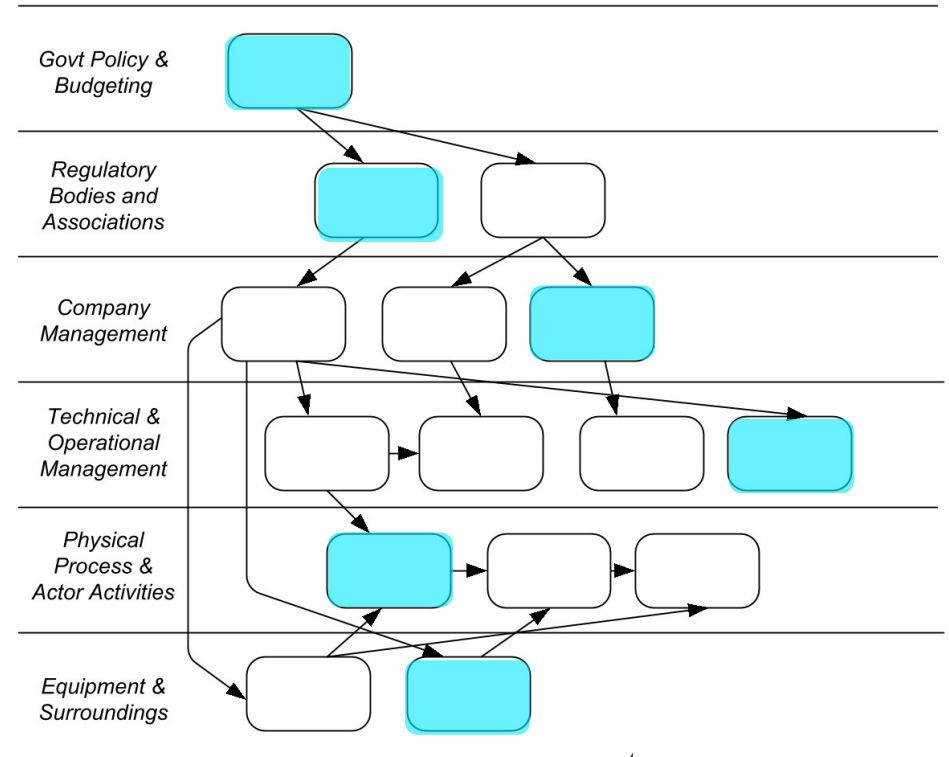
AcciMaps


- Map of a Sociotechnical system
- Root Cause Analysis approach is 'deprecated'

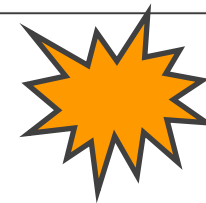
Taxonomy



Contributing Factors



 = Failures, decision, actions etc



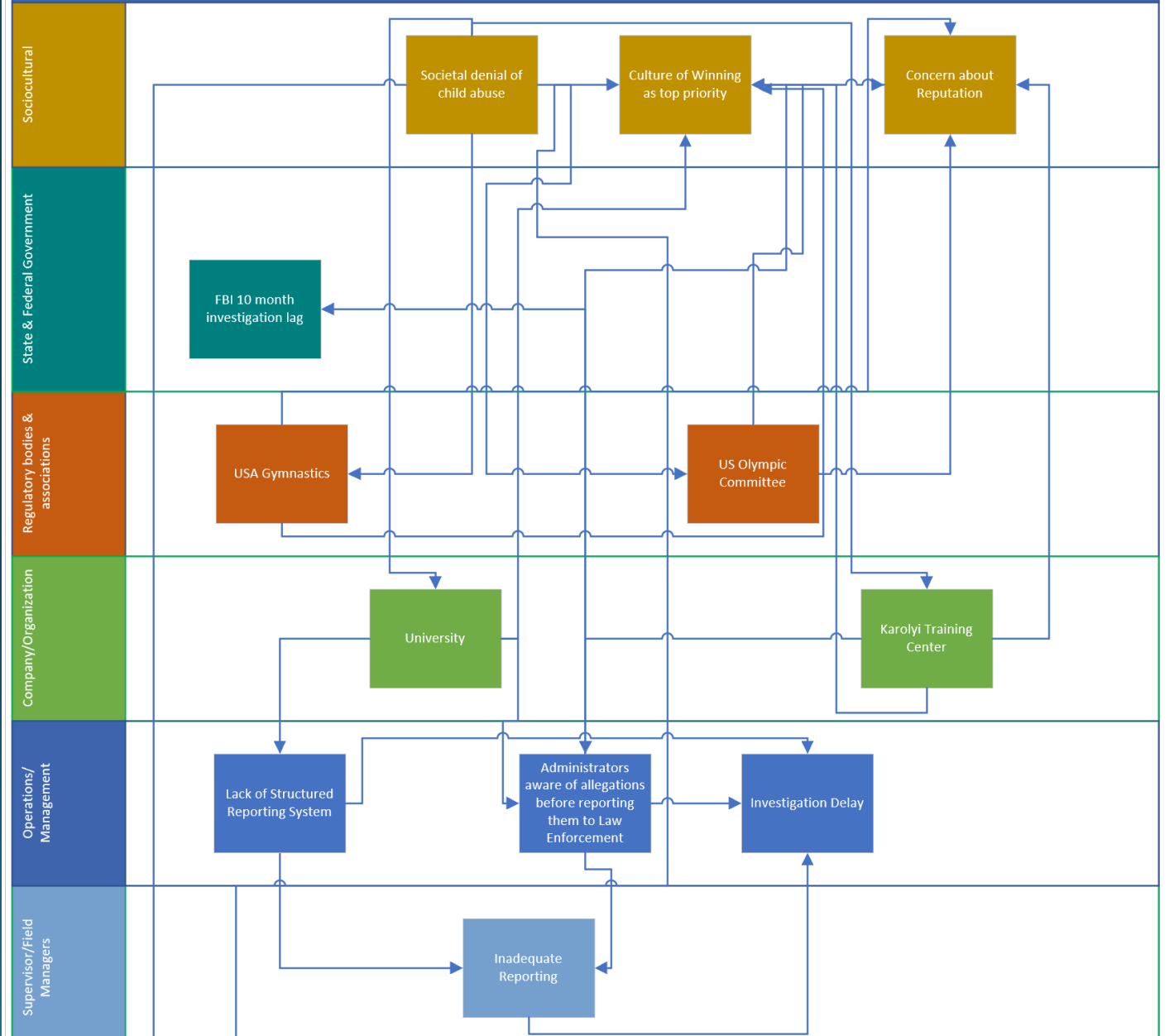
Adverse Event

Larry Nassar Case

- AcciMap based on Rasmussen's Systems Thinking Model

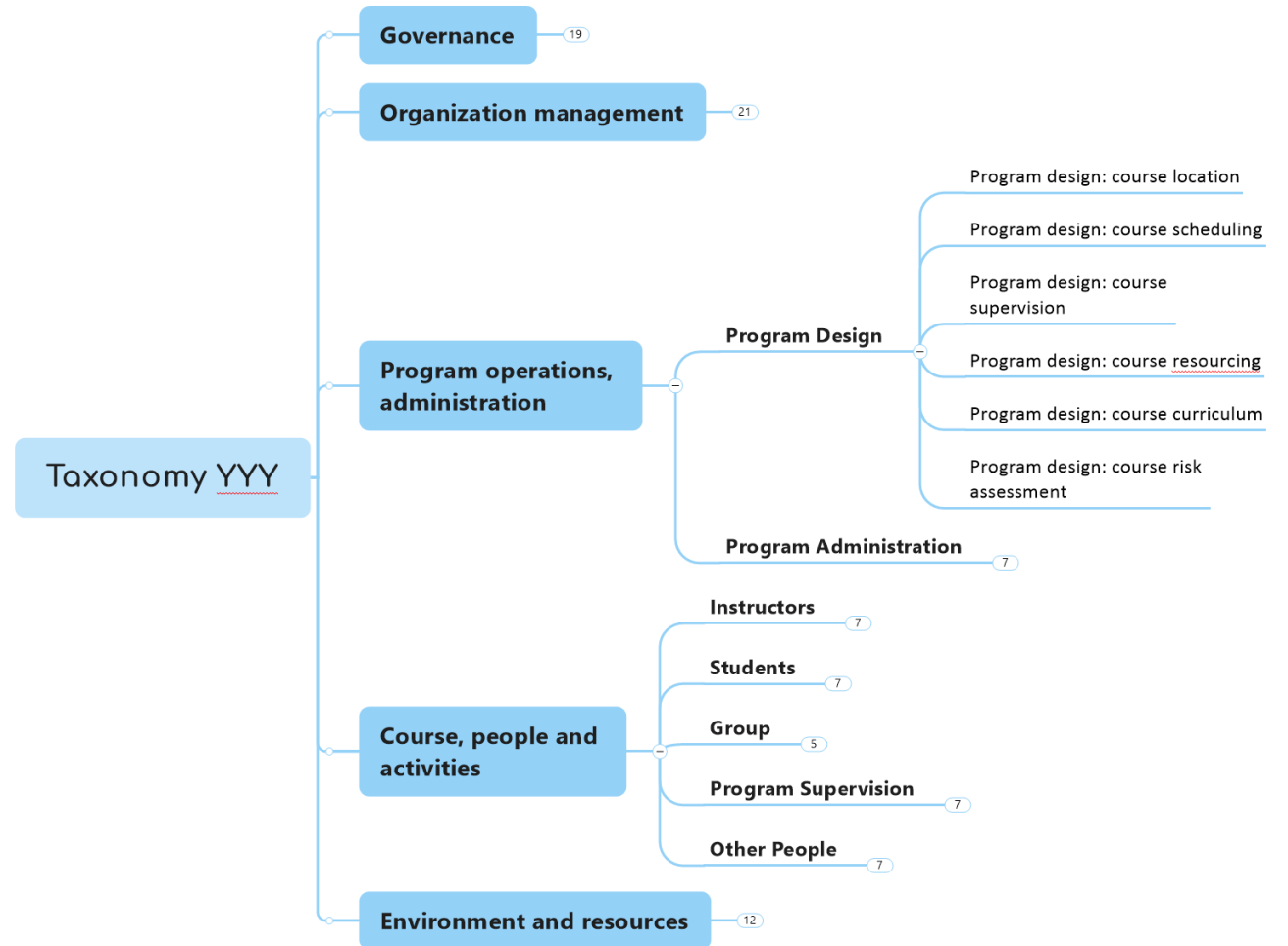
AcciMap: Nassar Sexual Abuse Case – Based on Vox Article

Taxonomy



Taxonomy Examples

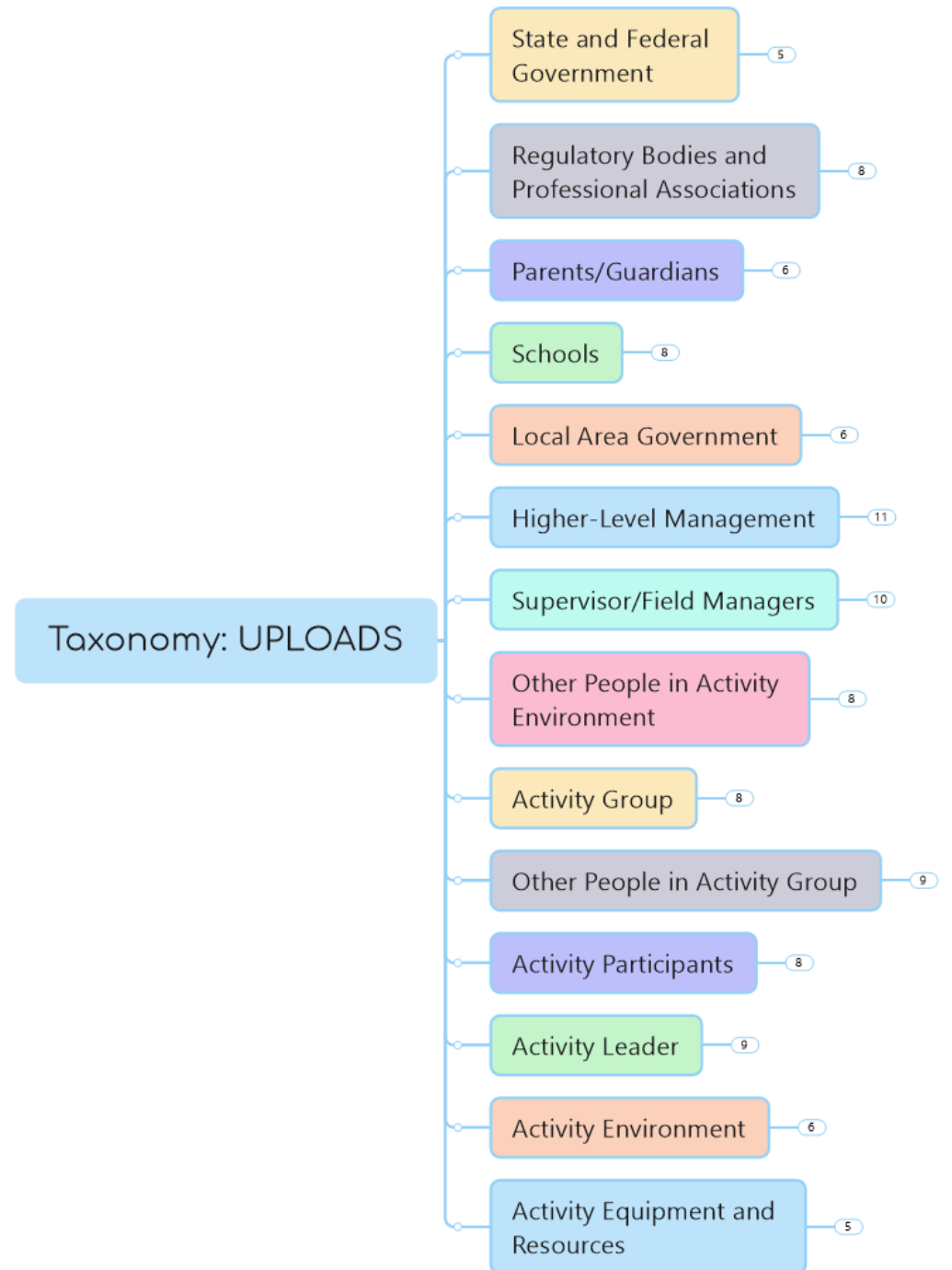
Sample Taxonomy with XXX, YYY, Generic



Sample Taxonomy

- Taxonomy for Causation in Led Outdoor Activities

From Translating Systems Thinking Into Practice:
A Guide to Developing Incident Reporting
Systems - By Natassia Goode, Paul M. Salmon,
Michael Lenne, Caroline Finch



Case Study



6 students and a teacher drown in a canyoning accident in April 2008

Mangatepopo Tragedy - NZ

Building an AcciMap

Domain

Identify the levels of your System based on your Domain

Taxonomy

Identify a Taxonomy of Factors

Factors

Identify Contributing Factors in the Incident

Relationships

Identify Relationships between Factors

Analysis

Formulate Recommendations based on Scope

Build an AcciMap

- Use the AcciMap Template
- Enter Contributing Factors at the appropriate Taxonomy Level
- Identify Relationships
- Identify what is In Scope

Scope Assessment

Determining Scope

- Based on the Taxonomy determine what things are:
 - In Scope
 - Out of Scope

In Scope Prioritization

- Risk Mitigation Impact (RMI)
 - What will get you the greatest impact with the least amount of resources?
 - What is the single most important factor to address that would have a significant impact regardless of resources?
 - If it is resource intense, how will you make the case for getting those resources?
 - Who are your stakeholders to help you?

Analyze in small groups

Report findings

Mangatepopo Gorge Incident Accimap

Government policy and budgeting

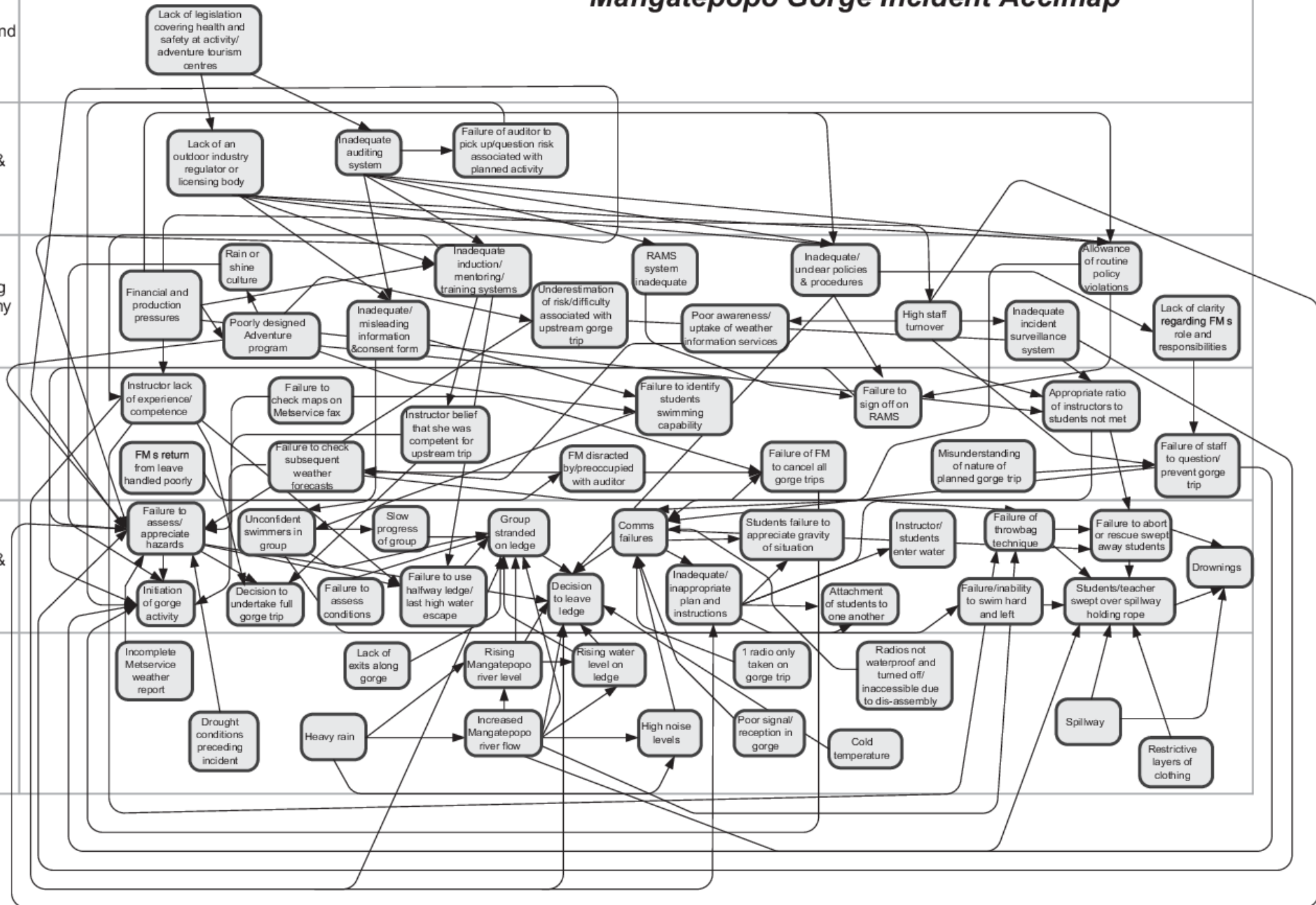
Regulatory bodies & associations

Local area Government planning & budgeting, Company management

Technical & operational management

Physical processes & actor activities

Equipment & surroundings



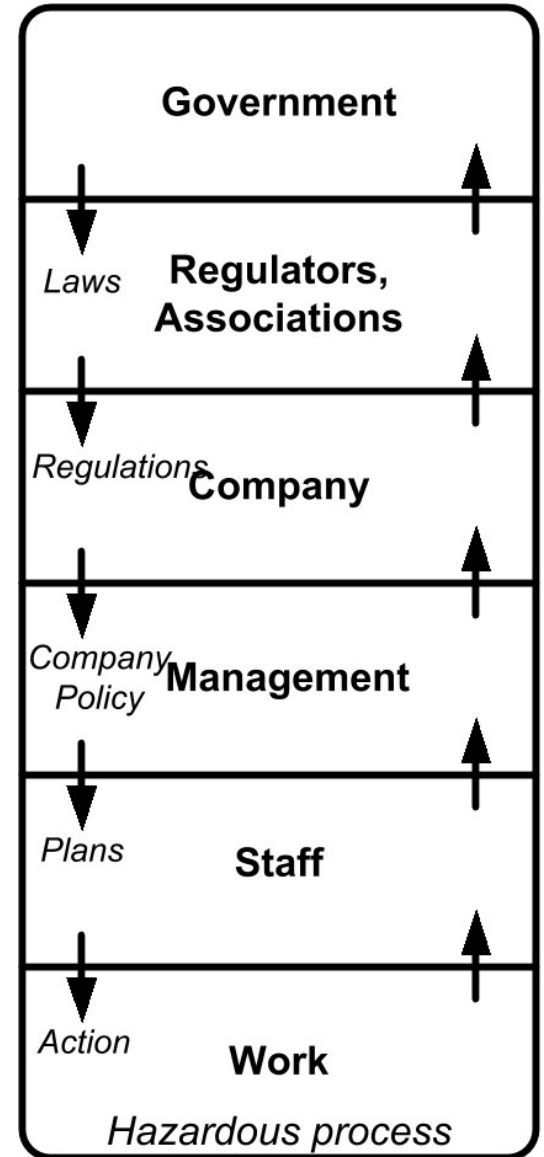
Systems Thinking is all about Data

“Data is Safety”



Incident Data Collection

- Systems Thinking requires that you collect incident and near miss data in order to assess and manage risk



OUTDOOR ACTION INCIDENT REPORT

This form should be completed under any of the following conditions:

- There is an injury or illness that requires treatment on a daily basis.
- If an injury or illness causes the person to miss some part of the trip (e.g. group has to wait for 1/2 day for the person to recover)
- If the person needs to be transported to a medical facility for examination and/or treatment.

Program Type _____

Staff _____ # Participants _____ # Program Days _____

Name _____ (circle) Male/Female

Staff/Student _____ Age _____

Incident Date _____ Time _____ AM/PM Day of course incident occurred _____

Geographical Location of Incident _____

WEATHER at Time of Incident:

Temp (°F) _____ Precipitation: Rain Snow None
 Wind (mph) _____ Visibility _____ (ft or miles)
 Surface Condition(circle) wet dry snow ice trail rock uneven flat sloped

TYPE OF INCIDENT Check each applicable category:

Injury _____ Illness _____ Motivation/Behavior _____ Near Miss _____

Is this a Lost-Day case? _____ NO _____ YES If Yes, # of Days Lost _____

Did the victim leave the field? _____ NO _____ YES If Yes, on what date _____

Was a potential bloodborne pathogen exposure? _____ NO _____ YES

Evacuation method (circle) walk unassisted, litter, vehicle, helicopter, other _____

Did the victim visit a medical facility? _____ NO _____ YES If Yes, length of stay in days _____

Did the victim return to the course? _____ NO _____ YES If Yes, on what date _____

Was there damage to (circle all that apply) vehicle, equipment or property? _____

TYPE OF INJURY (check all that apply)

<input type="checkbox"/> bruise, contusion or similar soft-tissue trauma	<input type="checkbox"/> immersion foot
<input type="checkbox"/> ligament sprain	<input type="checkbox"/> tendonitis
<input type="checkbox"/> muscle strain	<input type="checkbox"/> eye injury
<input type="checkbox"/> frostbite	<input type="checkbox"/> dental or tooth-related
<input type="checkbox"/> fracture	<input type="checkbox"/> burn
<input type="checkbox"/> dislocation	<input type="checkbox"/> blister(s)
<input type="checkbox"/> head injury without loss of consciousness	<input type="checkbox"/> laceration
<input type="checkbox"/> head injury with loss of consciousness	<input type="checkbox"/> skin abrasions
<input type="checkbox"/> near drowning or other submersion problem	<input type="checkbox"/> sunburn

_____ other _____

ANATOMICAL LOCATION OF INJURY(IES)

<input type="checkbox"/> Head	<input type="checkbox"/> Forearm	<input type="checkbox"/> Pelvis
<input type="checkbox"/> Face	<input type="checkbox"/> Wrist	<input type="checkbox"/> Hip
<input type="checkbox"/> Eye	<input type="checkbox"/> Hand/Fingers	<input type="checkbox"/> Thigh
<input type="checkbox"/> Neck	<input type="checkbox"/> Chest	<input type="checkbox"/> Knee
<input type="checkbox"/> Shoulder	<input type="checkbox"/> Abdomen	<input type="checkbox"/> Lower Leg
<input type="checkbox"/> Upper Arm	<input type="checkbox"/> Upper Back	<input type="checkbox"/> Foot
<input type="checkbox"/> Elbow	<input type="checkbox"/> Lower back	<input type="checkbox"/> Ankle
		<input type="checkbox"/> Toe

TYPE OF ILLNESS (check all that apply)

allergic reaction
 mild or localized
 severe, generalized or anaphylaxis
 altitude illness
 acute mountain sickness
 pulmonary edema
 cerebral edema
 hypothermia (specify core temperature if known ___°F/___°C)
 heat illness (specify core temperature if known ___°F/___°C)
 heat exhaustion
 heat cramps
 heat stroke
 chest pain or cardiac condition
 upper respiratory illness (runny nose, congestion, "cold")
 upper respiratory illness (other) _____
 abdominal or other gastrointestinal problem without diarrhea
 diarrhea
 apparent food-related illness
 nonspecific fever illness
 urinary tract infection
 skin infection
 eye infection
 other _____

PROGRAM ACTIVITY (activity at the time of the incident)

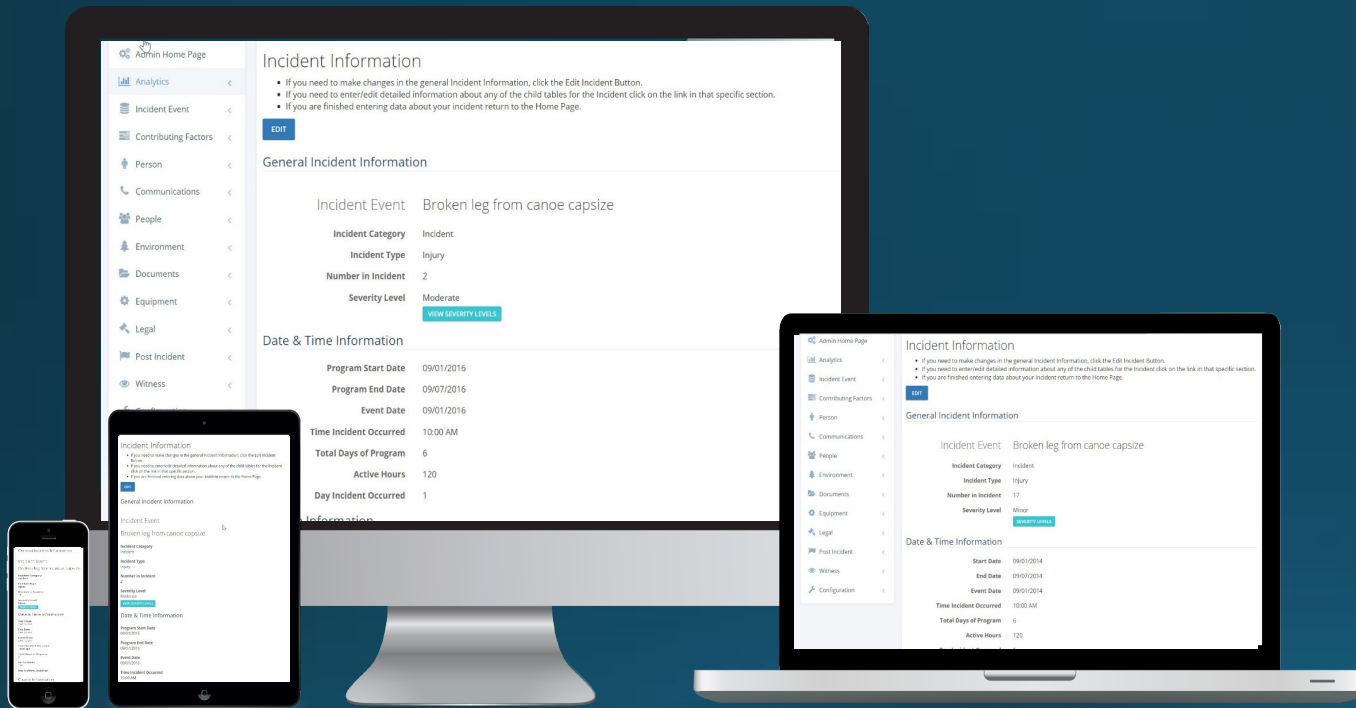
<input type="checkbox"/> Backpacking	<input type="checkbox"/> Horse	<input type="checkbox"/> Ropes course	<input type="checkbox"/> Snow Climb
<input type="checkbox"/> Camp	<input type="checkbox"/> Initiative Game	<input type="checkbox"/> Rock climbing	<input type="checkbox"/> Snowshoeing
<input type="checkbox"/> Canoe	<input type="checkbox"/> Kayak	<input type="checkbox"/> Run	<input type="checkbox"/> Solo
<input type="checkbox"/> Caving	<input type="checkbox"/> Mountaineering	<input type="checkbox"/> Sail	<input type="checkbox"/> Sportyak
<input type="checkbox"/> Cooking	<input type="checkbox"/> Portage	<input type="checkbox"/> Service	<input type="checkbox"/> Swim/Dip
<input type="checkbox"/> Cycle	<input type="checkbox"/> Rafting	<input type="checkbox"/> Ski w pack	<input type="checkbox"/> Unaccmp. Travel
<input type="checkbox"/> Dog sledging	<input type="checkbox"/> River crossing	<input type="checkbox"/> Ski w light pack	<input type="checkbox"/> Urban activity
<input type="checkbox"/> Glacier travel	<input type="checkbox"/> Rappel	<input type="checkbox"/> Sea Kayak	<input type="checkbox"/> Vehicle/Van
<input type="checkbox"/> Hike no pack	<input type="checkbox"/> Other(explain) _____		

Gen 1: Paper Forms

Gen 2: Spreadsheet

Id	Event	Type	Category	Activity
1	Broken leg from canoe capsize	Incident	Injury	Canoeing
2	Sprained ankle	Incident	Injury	Hiking
3	Stove flare-up	Close Call		Camping
4	Fall on challenge course	Close Call		High Ropes Course
5	Diarrhea & vomiting	Incident	Illness	Camping
6	Gastrointestinal Distress	Incident	Illness	Bike Touring
7	Blisters on heel	Incident	Injury	Hiking
8	Migraine headache	Incident	Illness	Canoeing
9	Participant Exhaustion	Close Call		Hiking

Gen 3: Risk Management Information System





What is a Risk Management Information System?

Database System for collecting and analyzing Incident and Close Call Data that allows you to apply Safety-I & Safety-II principles of causal analysis to inform your risk management process.

Risk Management Information Systems



Submit Data

Review & Assess

Analytics Insights

Implement Change

Developing an RMIS

Review your
Incidents

1

Develop a
Database

3

Train staff on
Submitting data

5

Implement
Change

7

Decide what
Data to Track

2

Determine
Taxonomy

4

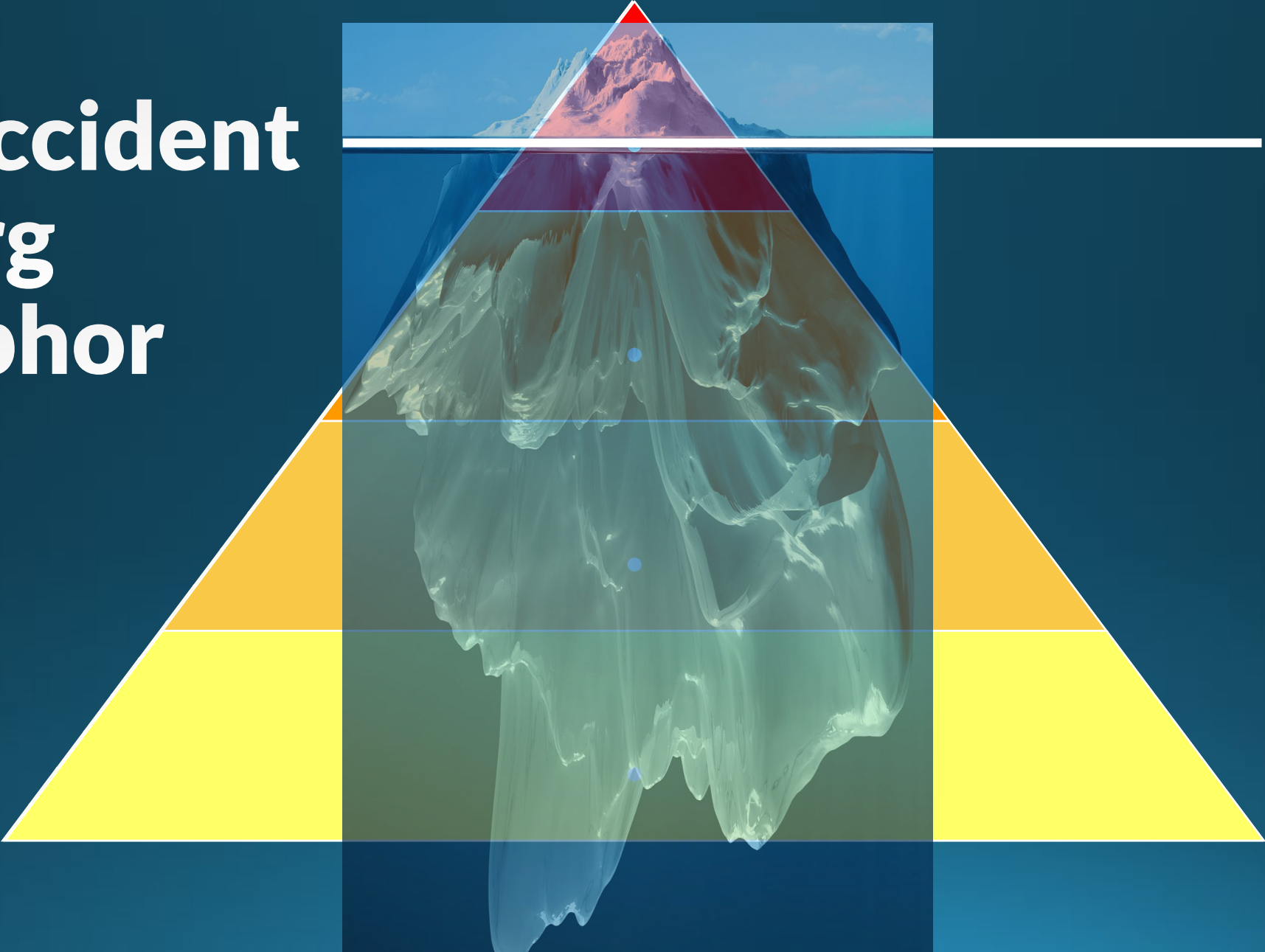
Build Analytics

6

Accident Pyramid



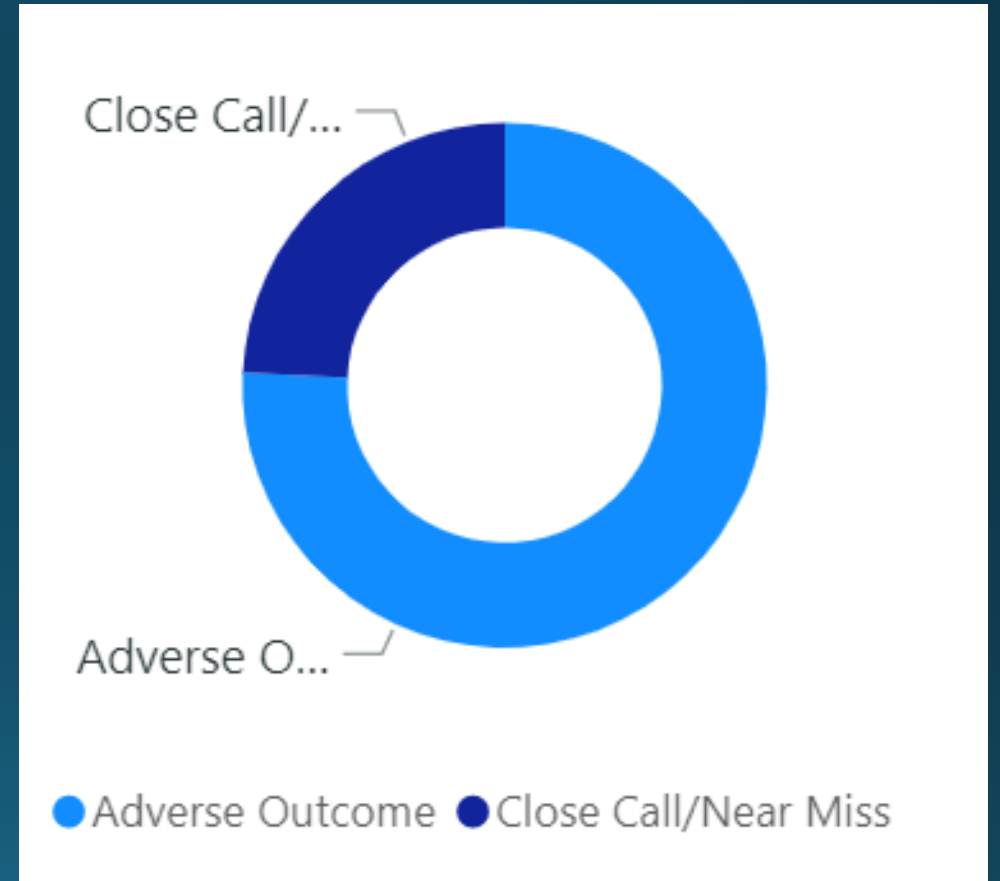
The Accident Iceberg Metaphor



Incidents

Near Misses

How many Near Miss Reports are you getting?



What Data to Track?



- Start with an assessment of past incidents
 - What are most common?
 - What are the most severe?
 - What incidents are commonly associated with that activity, population, etc. (even if it hasn't happened to you)
 - What has never happened (or you never heard about it) but you need to prepare for?

RMIS Data

- Data that will provide insights



Parent-Child Tables



Lookup Tables

Incident Table	
IncidentId	100
IncidentTitle	Climbing Fall
ActivityId	22
Date	10/1/2022
Time	11:00 AM

Activity Lookup Table		
ActivityId	20	Biking
	21	Canoeing
	22	Top Rope Climbing
	23	Bouldering



All Incidents & Trends

Incident Events

[Create New](#)[Instructions](#)[EXPORT TO EXCEL](#)[EXPORT TO PDF](#)

Drag a column header and drop it here to group by that column

	Event Details	Incident Category	Incident Type	Severity Type	Activity Type	Date	Actions
▶	Broken leg from canoe capsizes	Adverse Outcome	Injury	Minor	Canoeing	9/20/2020	Details Edit Delete
▶	Inappropriate Physical Contact	Close Call/Near Miss	Motivational/Behavioral	Minor	Not Applicable	7/10/2020	Details Edit Delete
▶	Rockfall Near Miss	Close Call/Near Miss	Crime	Moderate	Not Specified	6/21/2020	Details Edit Delete
▶	Snowboarding fall on jumping	Adverse Outcome	Injury	Minor	Not Specified	2/11/2018	Details Edit Delete
▶	Nausea	Adverse Outcome	Injury	Minor	Hiking (no pack)	5/5/2016	Details Edit Delete
▶	Homesickness	Close Call/Near Miss	Illness	Minor	Hiking (no pack)	5/5/2016	Details Edit Delete
▶	Migraine	Adverse Outcome	Illness	Minor	Backpacking	5/5/2016	Details Edit Delete
▶	Knee pain	Adverse Outcome	Illness	Minor	Backpacking	5/5/2016	Details Edit Delete
▶	Heat exhaustion	Adverse Outcome	Injury	No impact	Biking - Road	5/5/2016	Details Edit Delete

Real-time Analytics

IncidentAnalytix Tenant 1

Data for My Organization Only

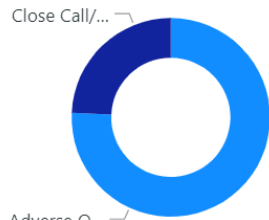
Incident Date Range

7/3/2012 9/20/2020



IncidentAnalytix Actionable Insights

Incidents by Category



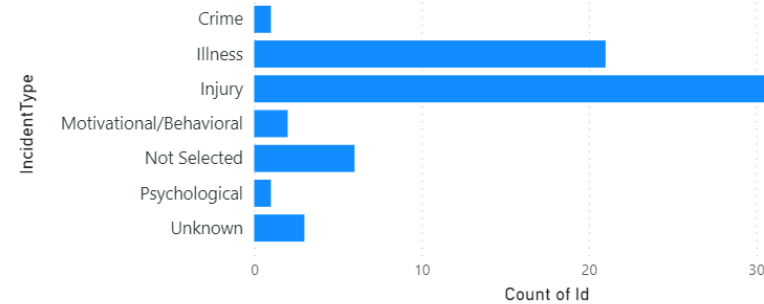
● Adverse Outcome ● Close Call/Near Miss

Incidents by Severity

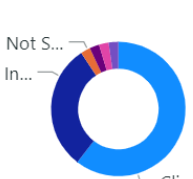


● No impact

Incidents by Type

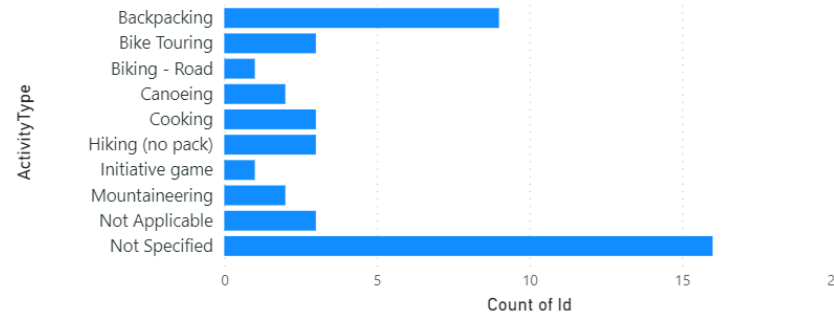


Incidents by Person Status



● Client/P...
● Instruct...
● Not Sele...
● Other Fa...
● Parent/...
● Unknown

Incidents by Activity



Quick Summary

Adverse Outcome accounted for 75.76% of Count of Id.

Count of Id for Adverse Outcome (50) was higher than Close Call/Near Miss (16).

- If you need to enter/edit detailed information about any of the child tables for the Incident click on the link in that specific section.
- If you are finished entering data about your incident return to the Home Page.

EDIT

General Incident Information

Incident Event	Broken leg from canoe capsized
Incident Category	Incident
Incident Type	Injury
Number in Incident	2
Severity Level	Moderate
	VIEW SEVERITY LEVELS

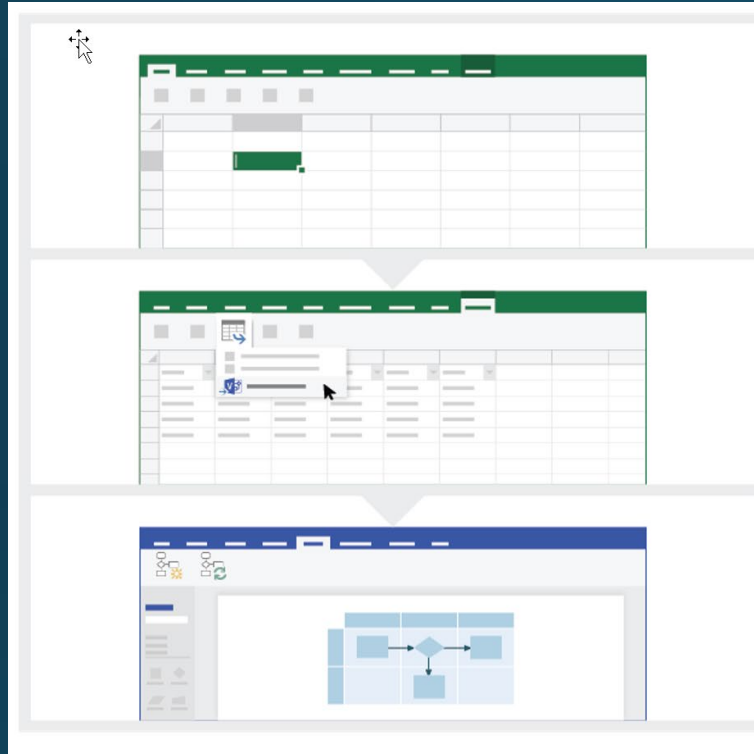
Date & Time Information

Program Start Date	09/01/2016
Program End Date	09/07/2016
Event Date	09/01/2016
Time Incident Occurred	10:00 AM
Total Days of Program	6
Active Hours	120



Demo

www.IncidentAnalytix.com



1

Add your process data

Use this Excel template to add your process data to the sheet titled 'Process Map'.

2

Export to Visio

Select the Table in the 'Process Map' sheet to see the Table Tools Design tab. Click the Export option and then click 'Export Table to Visio Diagram' to create the diagram in Visio.

3

Get your diagram

Visio creates the shapes and connectors, and it does the layout automatically for you!

Understand the Process Map >

Note: The feature is only available on Visio Plan 2 for M365. If you do not have Visio Plan 2 installed then the 'Export Table to Visio Diagram' option will not be available.

Creating AcciMaps - Excel

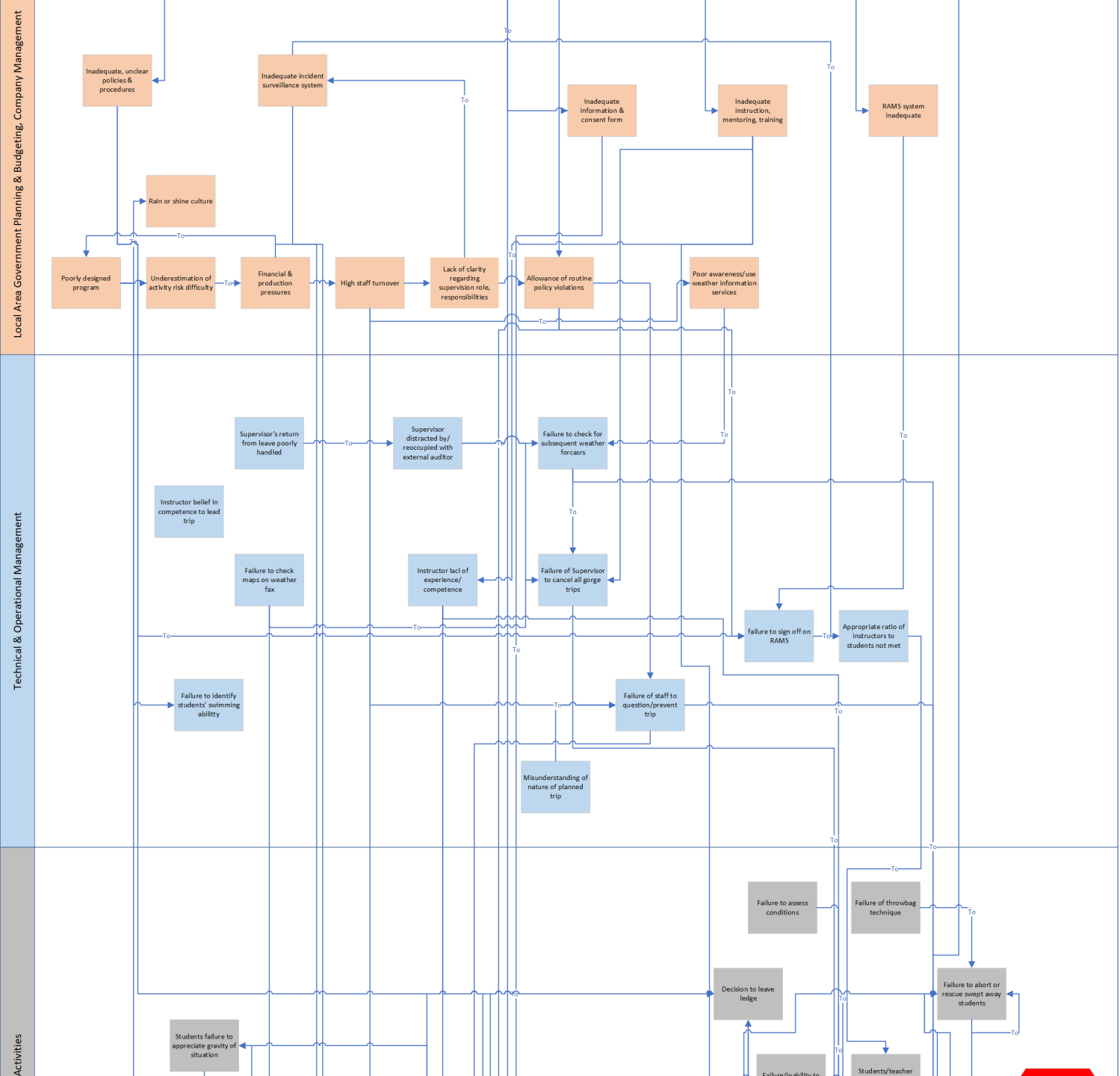
Creating AcciMaps - Excel

Contributing Factor Taxonomy	Contributing Factor	Relates To
Government Policy & Budgeting	Lack of Legislation	B1,B2,B3
Regulatory Bodies & Associations	Lack of industry regulator/licensor	C4,C5,C7,C9,C12,E1
Regulatory Bodies & Associations	Inadequate auditing system	B3
Regulatory Bodies & Associations	Failure of auditor to question activity risk	E2
Local Area Government Planning & Budgeting, Company Management	Financial & production pressures	C3,C10
Local Area Government Planning & Budgeting, Company Management	Rain or shine culture	
Local Area Government Planning & Budgeting, Company Management	Poorly designed program	C2,C6,D7,E1
Local Area Government Planning & Budgeting, Company Management	Inadequate information & consent form	E3
Local Area Government Planning & Budgeting, Company Management	Inadequate instruction, mentoring, training	D1,D8,E7
Local Area Government Planning & Budgeting, Company Management	Underestimation of activity risk difficulty	E1
Technical & Operational Management	Instructor lacl of experience/competence	E8,E9,E16
Technical & Operational Management	Supervisor's return from leave poorly handled	D6
Technical & Operational Management	Failure to check maps on weather fax	D8,E1
Technical & Operational Management	Failure to check for subsequent weather forcasrs	D8,E2
Technical & Operational Management	Instructor belief in competence to lead trip	
Technical & Operational Management	Failure of staff to question/prevent trip	E2,E10
Physical Processes & Actor Activities	Failure to assess/appreciate hazards	E2,E4,E8,E9
Physical Processes & Actor Activities	initiation of trip activity	
Physical Processes & Actor Activities	Unconfident swimmers in group	E6,E8,E13
Physical Processes & Actor Activities	Decision to undertake full gorge trip	
Physical Processes & Actor Activities	Failure to assess conditions	E8
Physical Processes & Actor Activities	Slow progress of group	E8
Physical Processes & Actor Activities	Failure to user halfway ledge/last high water escape	E8
Physical Processes & Actor Activities	Group stranded on ledge	
Physical Processes & Actor Activities	Decision to leave ledge	

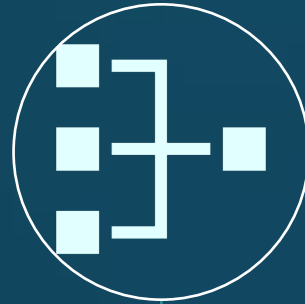


Generated AcciMap

- Autogenerated AcciMap from an Excel spreadsheet



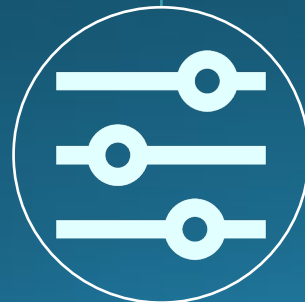
Concepts



**Systems
Thinking**



Safety-II



**Mitigating
Factors**

Taxonomy

Safety-II

What's Going Right?

We are safe if there is as much as possible of this...

"Trying to understand safety by only looking at incidents is like trying to understand successful marriages by only looking at divorces."

- Marit de Vos 2018



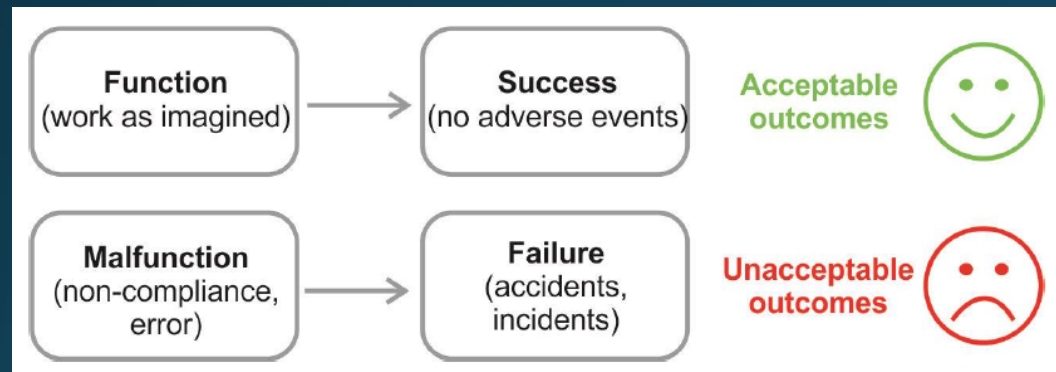


Safety-II	
Definition of Safety	As many things as possible go right
Safety Management Principle	Proactive, continuously try to anticipate developments and events
View of Human Factors	Humans are seen as a resource necessary for system flexibility and resilience. They provide flexible solutions to many problems.
Accident Investigation	Things basically happened in the same way regardless of outcome (positive or negative). The purpose of an investigation is to understand how things usually go right as a basis for explaining how things occasionally go wrong.

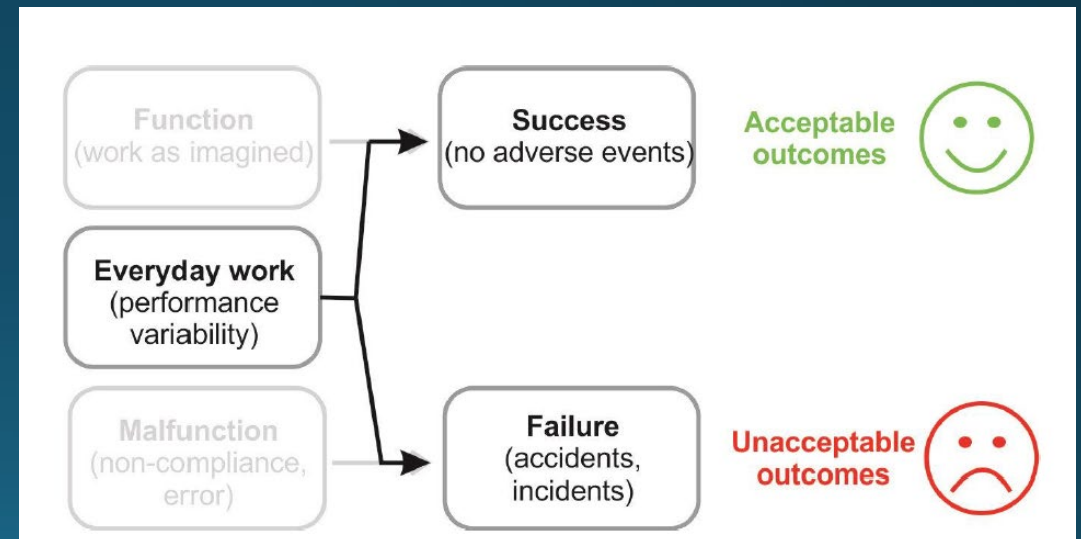
Safety-II

Hollnagel, E. Wears, R., Braithwaite, J. - EUROCONTROL (2013). *From Safety-I to Safety-II (A White Paper)*. Brussels.

Safety-I



Safety-II



Hollnagel, E. Wears, R., Braithwaite, J. - EUROCONTROL (2013). *From Safety-I to Safety-II (A White Paper)*. Brussels.

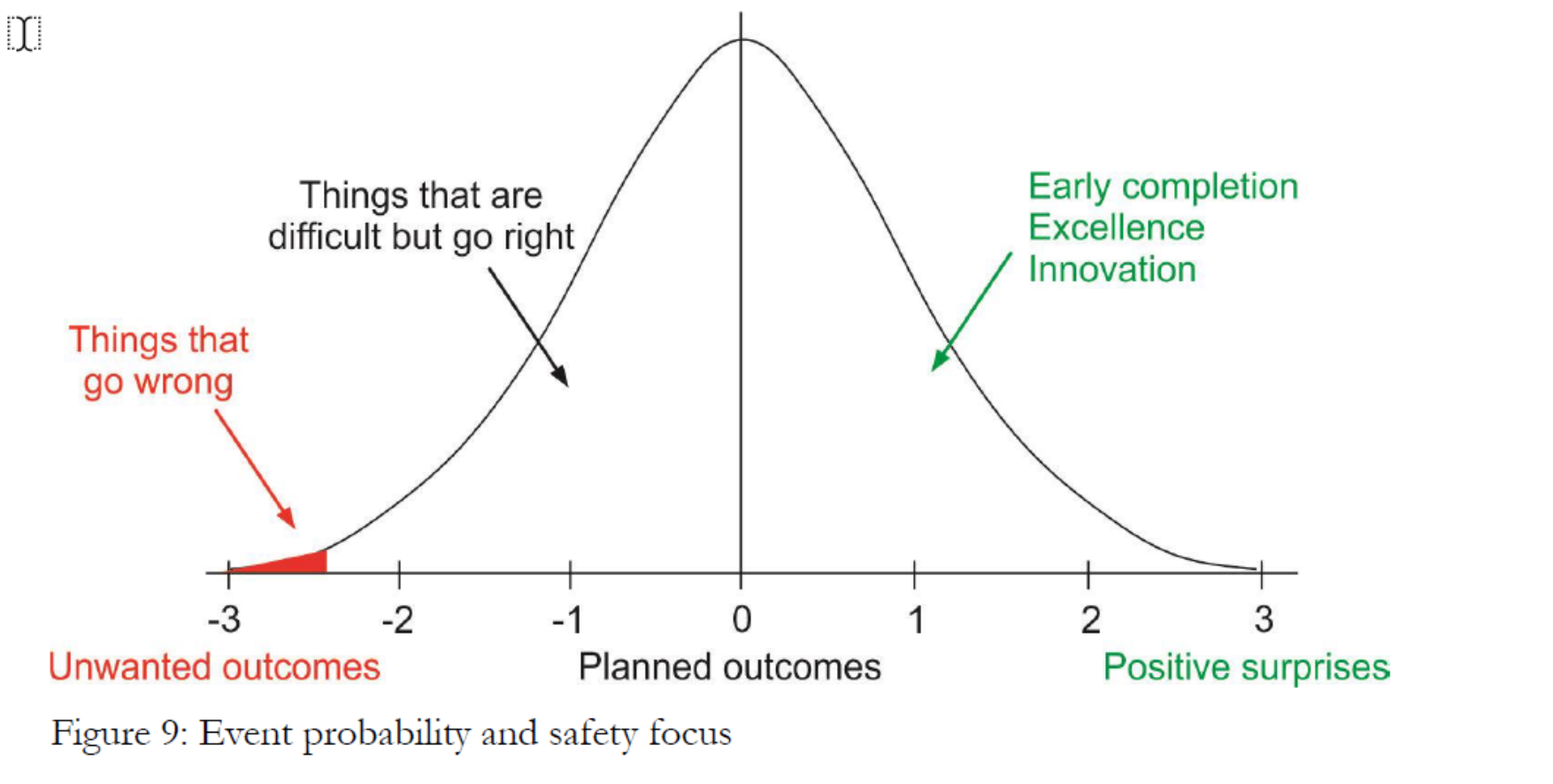


Figure 9: Event probability and safety focus

Hollnagel, E. Wears, R., Braithwaite, J. - EUROCONTROL (2013). *From Safety-I to Safety-II (A White Paper)*. Brussels.



Safety-I Data Approach

- Reduce number of adverse events
- Look for failures & malfunctions, try to eliminate causes and improve barriers
- Learning only uses a fraction of the data available

Safety-II Data Approach

- Ability to succeed under varying conditions
- Use what goes right to understand everyday performance to do better and be safer
- Learning uses most of the data available



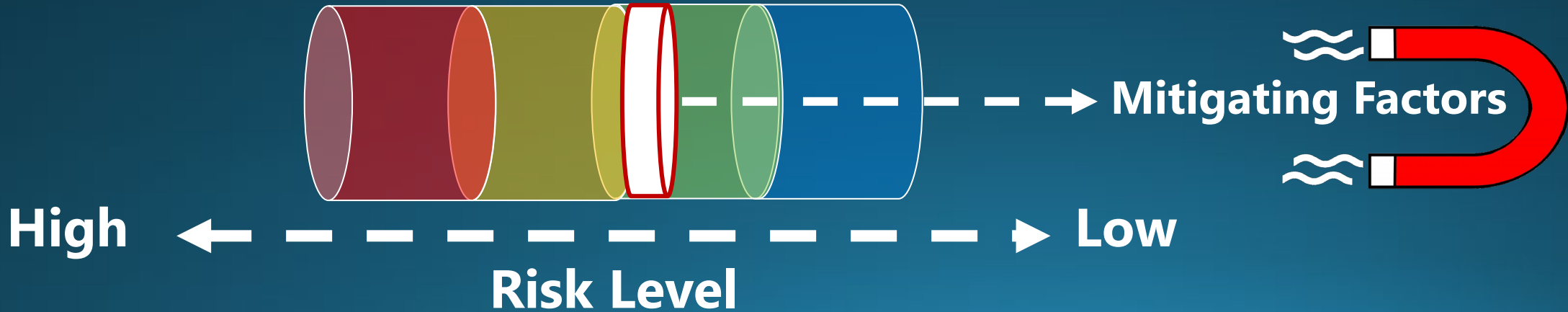
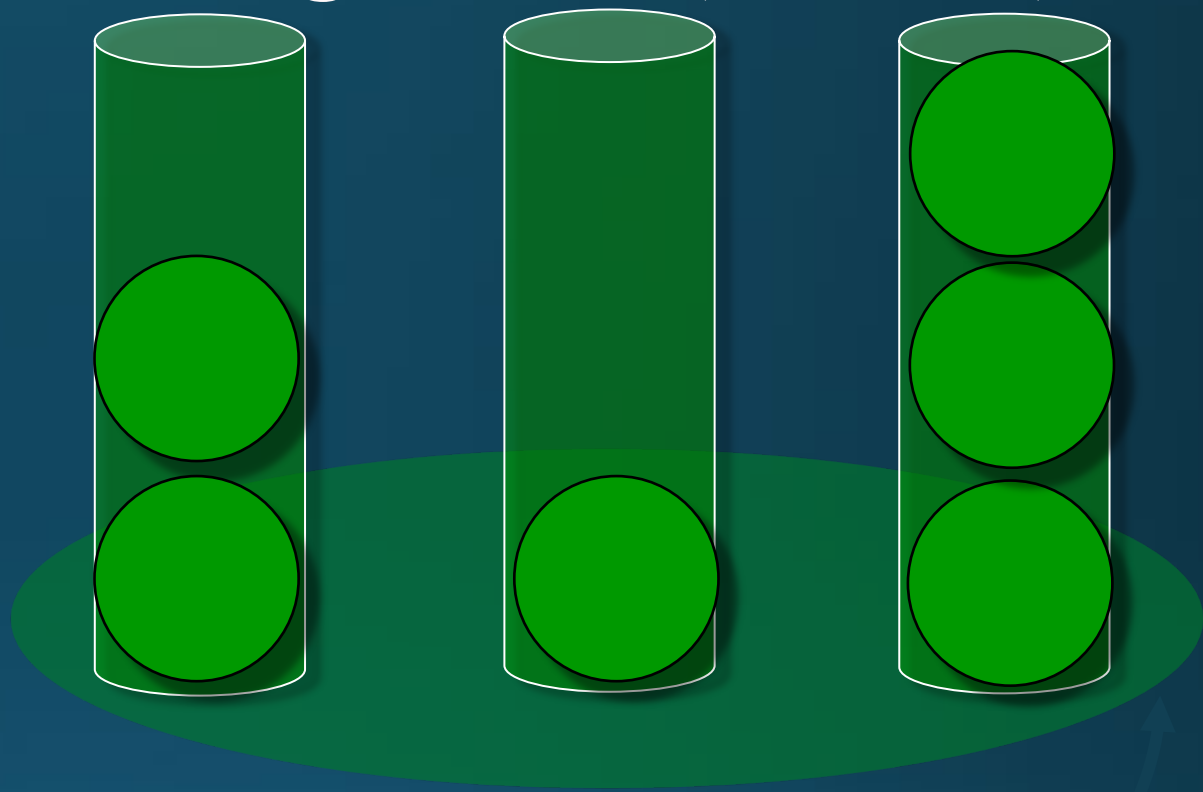
1 failure in 10,000 events

9,999 non-failures in 10,000 events



Risk Assessment & Safety Management (RASAM)

Mitigating Factors



Safety-I & Safety-II

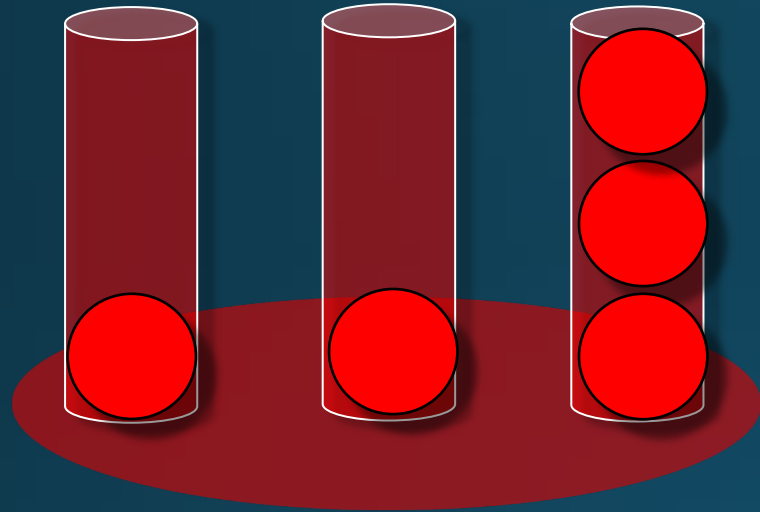
- It is not Safety-I **or** Safety-II
- It is Safety-I **and** Safety-II

“Look at what goes right as well as what goes wrong, and learn from what works as well as from what fails.”

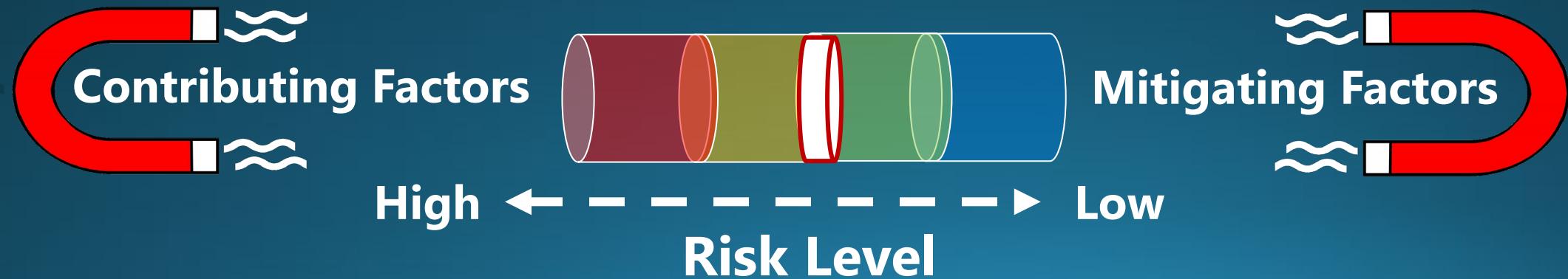
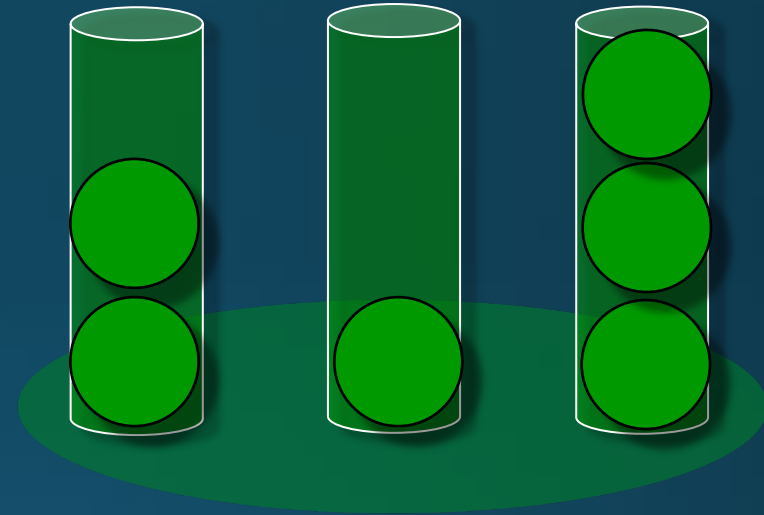


RASM - Safety-I & Safety-II

Contributing



Mitigating



When Assess Using Safety-I vs Safety-II?

Safety-I – Simple Systems

- Systems are Decomposable – we can break things down into specific components and look for points of failure in each component
- Functionality is Bimodal – it either works or it is broken

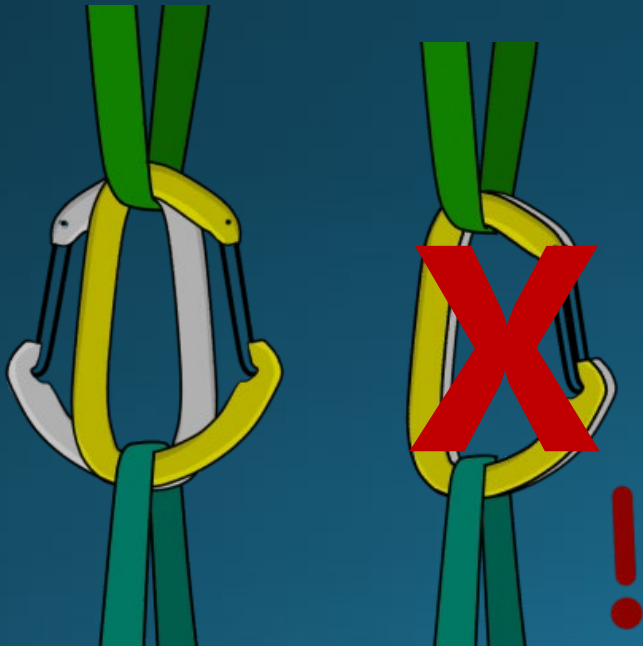
Safety-II – Complex Systems

- System success is based on relationships across many components, not just the components themselves
- Functionality is not Bimodal

When do to use Safety-I vs Safety-II?

Simple Bimodal System

- Carabiners set as Opposite and Opposed



Complex System

- Making decisions about avalanche danger with many variables & low data confidence



Concepts



Systems Thinking



Safety-I

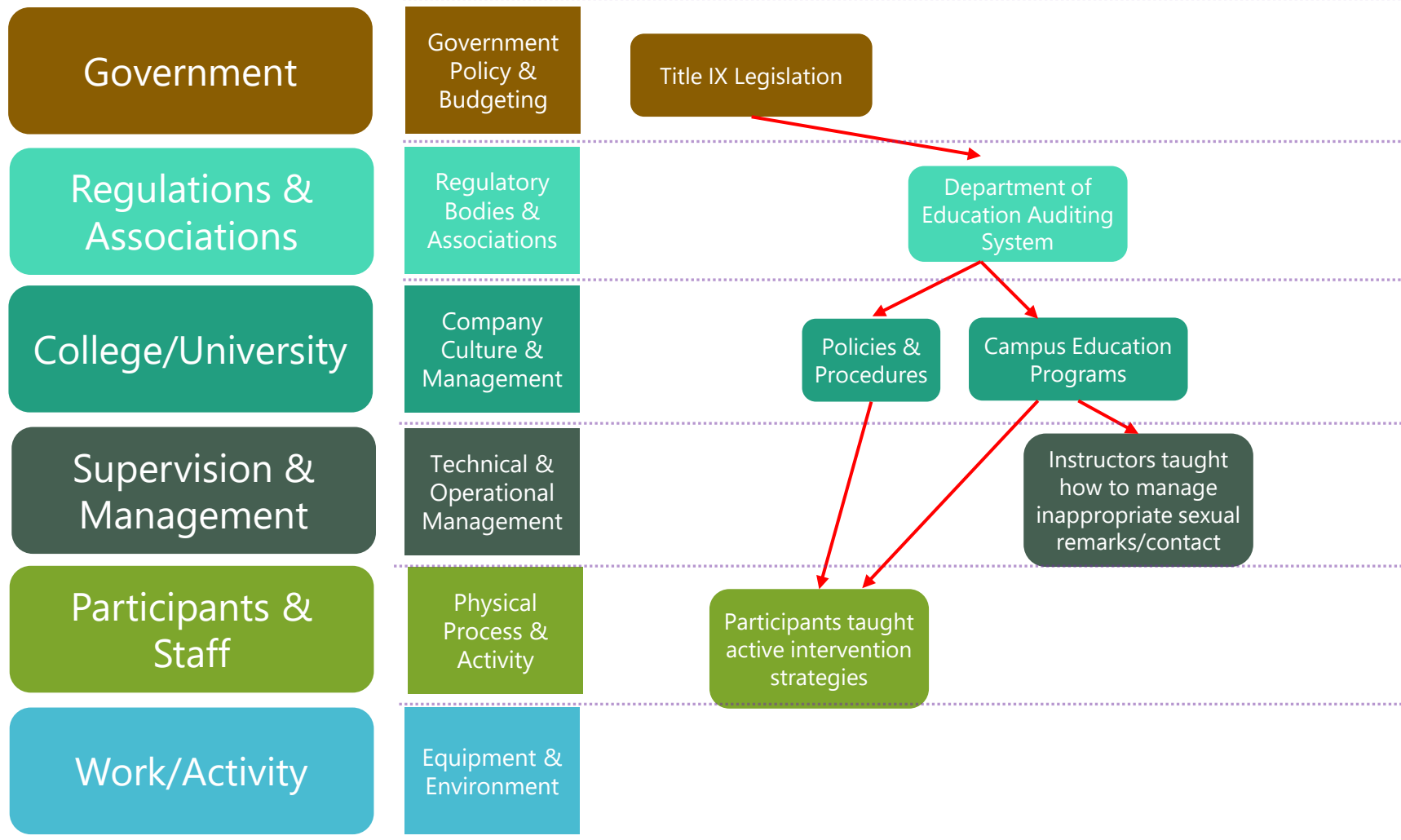


Safety-II

Safety-II PreventiMaps

- **Safety-I = AcciMaps**
Contributing Factor Analysis of "What went wrong?"
- **Safety-II = PreventiMaps**
Mitigating Factor Analysis of "What went right?"

PreventiMap: Title IX Implementation on Campus



How to Integrate Safety-I & Safety-II?

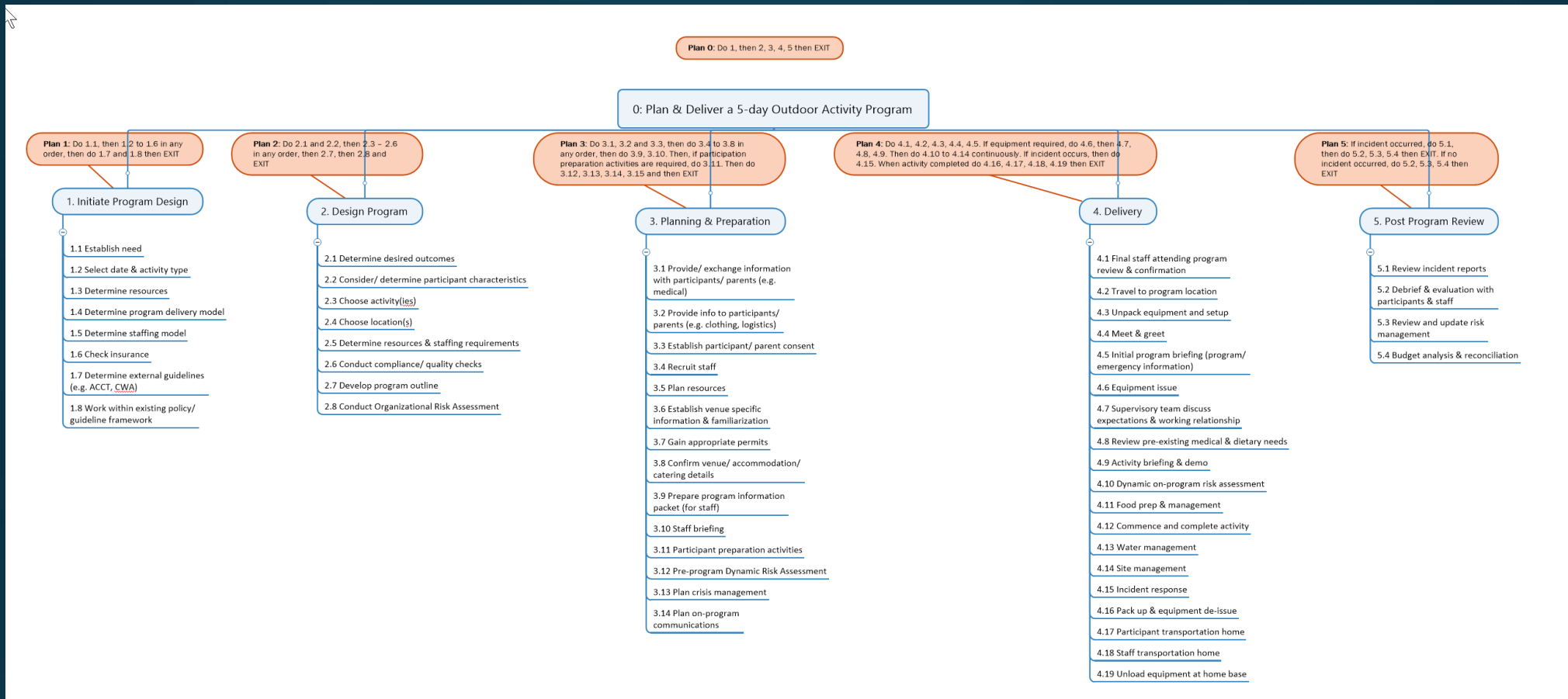
- There is often a correlative relationship between Contributing Factors in Safety-I and the Mitigating Factors in Safety-II
 - “What is wrong points the way to what should be right”
- Any Incident/Near Miss analysis you do with Safety-I presents a set of targets for Safety-II

Deconstruct Contributing Factor to Safety-II Goals (Design Thinking)



Hierarchical Task Analysis (HTA)

Identifying risks and emergent risks across sociotechnical systems: The NETworked Hazard Analysis and Risk Management System (NETHARMS).
Clare Dallat, Paul Salmon, Natassia Goode





Case Study – Part 2



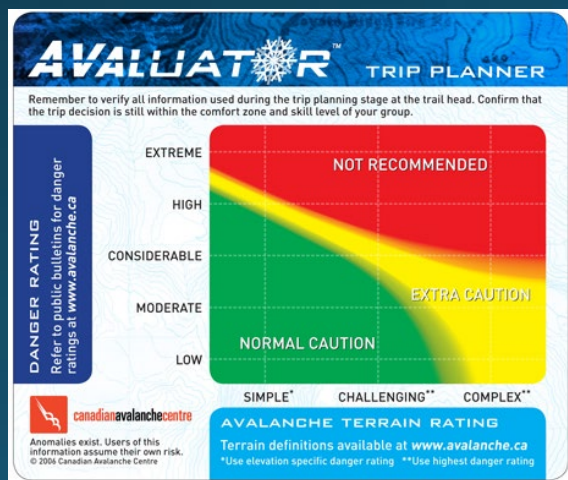
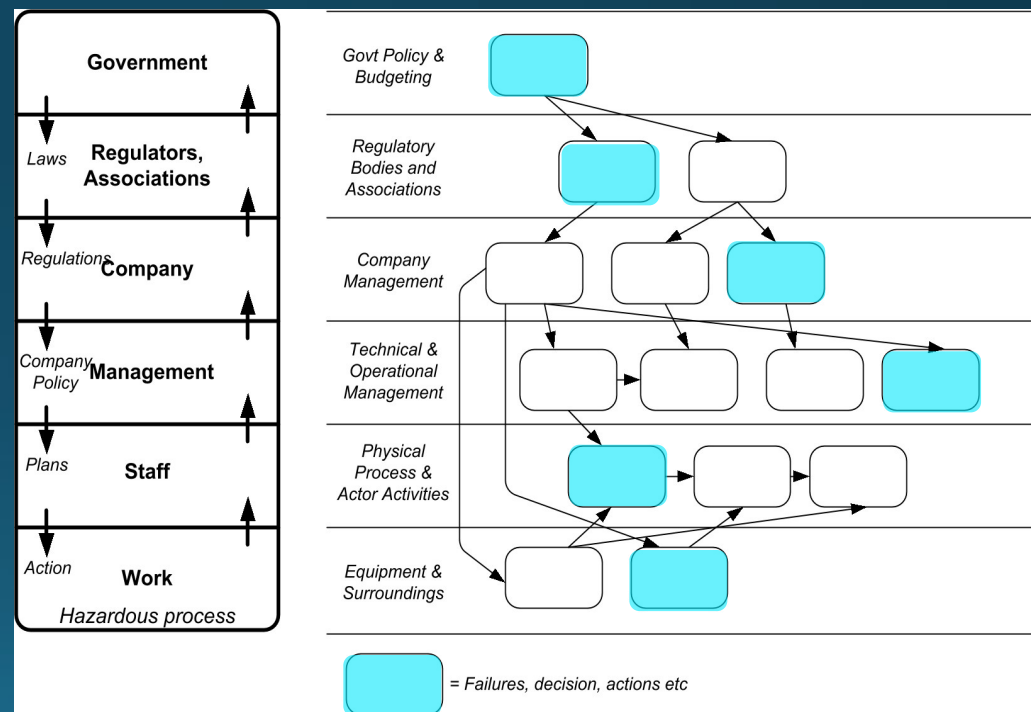
Designing a Successful System with HTA or Self Study an Incident

Using Different Tools at Different Levels

Instructor Level



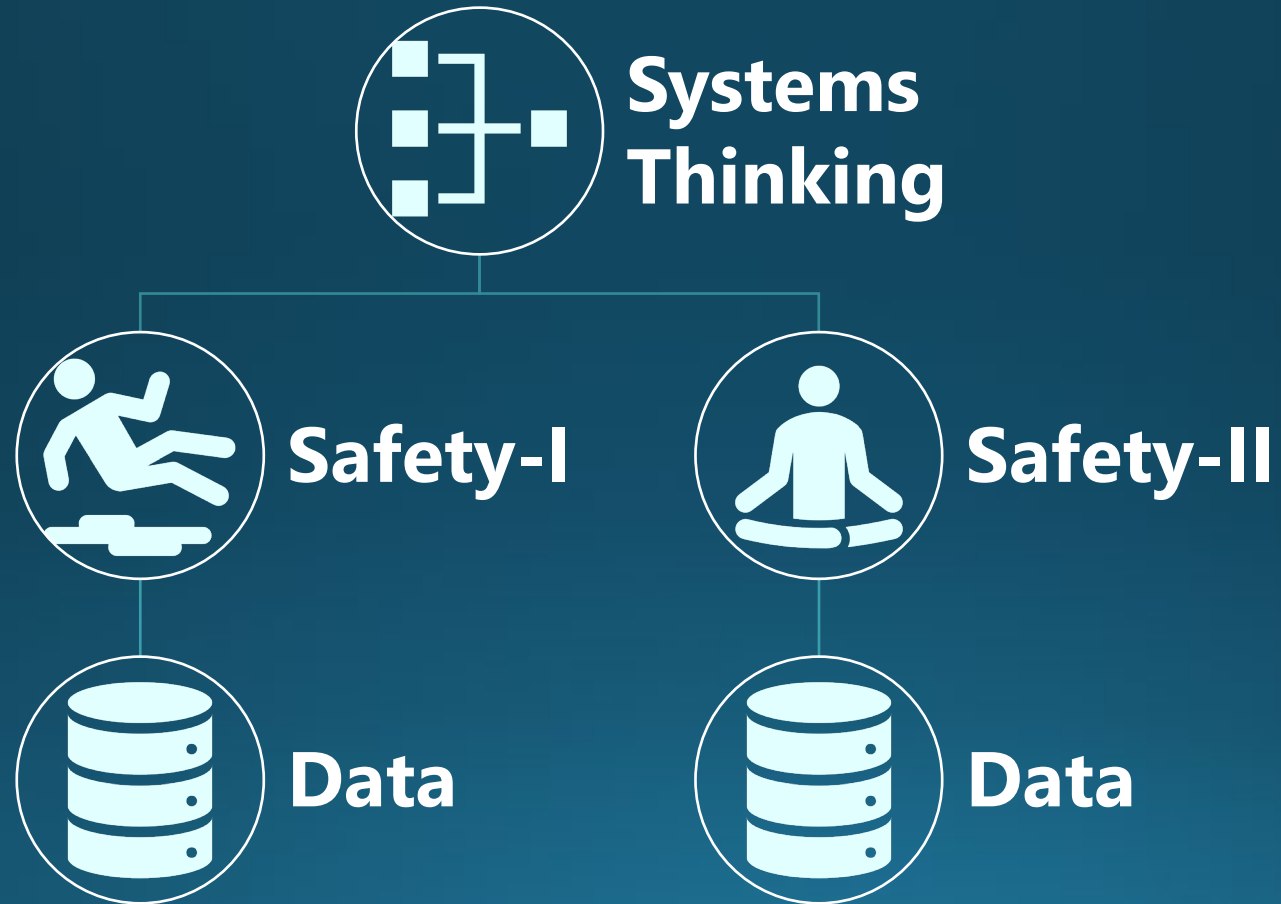
Organizational Level



Implementing Safety Culture Change

- Responsibility runs up and down the entire organization
- Moves away from 'Blame Culture'
- Individuals need to be held accountable, but only for those things that they have control over
- Encourages incident and close call reporting
- More Data means deeper understanding

Concepts



Key Concepts

- Systems Thinking
- Safety-I
- Taxonomy of Causation
- Building AcciMaps
- Safety-II
- Building PreventiMaps
- Scope
 - Identifying In Scope vs Out of Scope
 - Determining RMI for In Scope
- Collecting Incident and Close Call Data

Three Action Steps

- Implement Rasmussen's Systems Thinking approach in your organization for both Safety-I and Safety-II frameworks. Analyze adverse outcomes and near misses for the contributing factors that 'led' to the event. Analyze the mitigating factors in place that prevented an incident and determine how to 'expand' these factors.
- Understand the role that Risk Management Information Systems play in the collection and analysis of accident and near miss data through building AcciMaps and PreventiMaps, using HTA and utilizing business analytics tools.
- Analyze your data and determine when factors are 'in scope' allowing actionable steps to be implemented for managing risk or 'out of scope' limiting organizational response.

Final Thoughts

The biggest mistake
about a mistake
is not learning from it.

Data is safety.

Key Resources

- Risk Management in a Dynamic Society: A modeling problem – Jens Rasmussen (1997) - <https://orbit.dtu.dk/ws/files/158016663/SAFESCI.pdf>
- From Safety-I to Safety-II: A White Paper – Hollnagel E; Wears RL; Braithwaite J. (2015) - <https://www.england.nhs.uk/signuptosafety/wp-content/uploads/sites/16/2015/10/safety-1-safety-2-white-papr.pdf>
- Translating Systems Thinking Into Practice: A Guide to Developing Incident Reporting Systems – Goode, Salmon, Lenne, Finch – Available at Amazon Books

Videos & Articles

- 1.5.5 Safety-I vs Safety-II - <https://www.youtube.com/watch?v=WM0LVv9NrhM>
- Doing Safety Differently – Sydney Dekker:
<https://www.youtube.com/watch?v=6gREMV6j2A4>
- Safety-II & Safety-II – Erik Hoffnagel: <https://vimeo.com/channels/1366431/89492241>
- Perceiving what cannot be seen” - the practical side of Safety - II - Erik Hollnagel:
<https://vimeo.com/159498494>
- A story of Safety-II – Jeffrey Braithwaite:
<https://www.youtube.com/watch?v=gauR843rRNk>
- Safety Differently | The Movie: <https://www.youtube.com/watch?v=moh4QN4IAPg>
- Sidney Dekker — Safety Differently Lecture:
<https://www.youtube.com/watch?v=oMtLS0FNDZs>
- Sidney Dekker — Just Culture short course 1:
<https://www.youtube.com/watch?v=PvWjgqDANWA>
- The New View of Safety with Todd Conklin:
<https://www.youtube.com/watch?v=loYUQIWiRgc>
- Dr. Todd Conklin speech "Risk Analysis is Fixed in Time - But Hazards Ebb and Flow:
<https://www.youtube.com/watch?v=X211fU39808>

Videos & Articles

- Guidelines for AcciMap Analysis: https://openresearch-repository.anu.edu.au/bitstream/1885/20987/2/01_Branford_Guidelines_for_ACCIMAP_2009.pdf
- Webinar: An Introduction to “New Safety” (HOP, Safety-II, and Safety Differently): <https://www.youtube.com/watch?v=zqZVGaFlhyw>
- FAA Safety Management Systems (SMS) Fundamentals: Policy: <https://www.youtube.com/watch?v=j8N0PZx5YwM>
- FAA Safety Management Systems (SMS) Fundamentals: Safety Risk Management Component: <https://www.youtube.com/watch?v=b6dwxQ3oEAE>
- Mangatepopo canyoning tragedy a decade on: 'I know they would be loving every minute of life': https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12032068
- In a Flash TV Movie: <https://www.tvnz.co.nz/shows/in-a-flash/episodes/s1-e1>
- BBC NASA Challenger Disaster: <https://www.youtube.com/watch?v=reM5fTo-6PI>
- Challenger Disaster Governmental Report: <https://www.govinfo.gov/content/pkg/GPO-CRPT-99hrpt1016/pdf/GPO-CRPT-99hrpt1016.pdf>
- A Review of Accident Modelling Approaches for Complex Critical Sociotechnical Systems: <https://www.semanticscholar.org/paper/A-Review-of-Accident-Modelling-Approaches-for-Qureshi/c3a597212068c27be45d84dec76e86baabd4cf90>

Resources

www.IncidentAnalytix.com/blog

staff@IncidentAnalytix.com

www.OutdoorEd.com