Adventure Tourism & the Science of Risk Management

Part II : Applying Systems Thinking to Adventure Tourism

Jeff Baierlein, Director, Viristar

viristar.com
viristar.com/cotr-mast-risk





Outline of Workshop

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Introduction

Pre-reading comments/questions

Presentation 1: RM Theories & Models

Self-Assessment: Do-mains & Instruments

Discussion

Break 1

Presentation 2: Application to Adventure Tourism

Self-Assessment: Systems Thinking & Risk Management

Discussion

Break 2

Case Study

Closure

Application

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How do we apply safety science to adventure tourism?

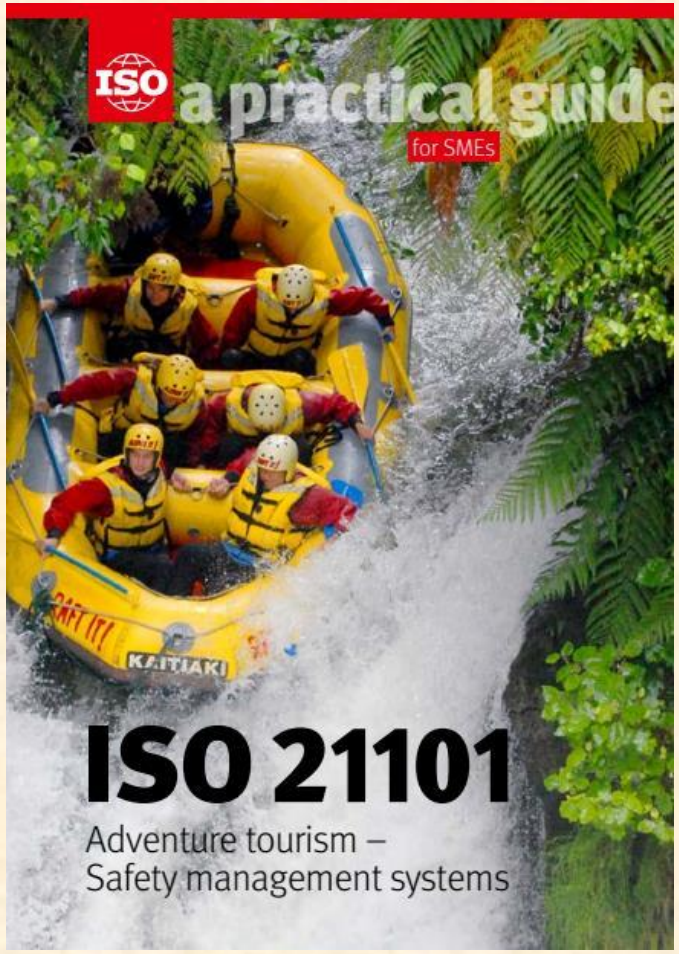
Risk Assessments

SEVERITY / PROBABILITY	Catastrophic (1)	Critical (2)	Marginal (3)	Negligible (4)
Frequent (A)	High	High	Serious	Medium
Probable (B)	High	High	Serious	Medium
Occasional (C)	High	Serious	Medium	Low
Remote (D)	Serious	Medium	Medium	Low
Improbable (E)	Medium	Medium	Medium	Low

Safety Culture

Systems Thinking

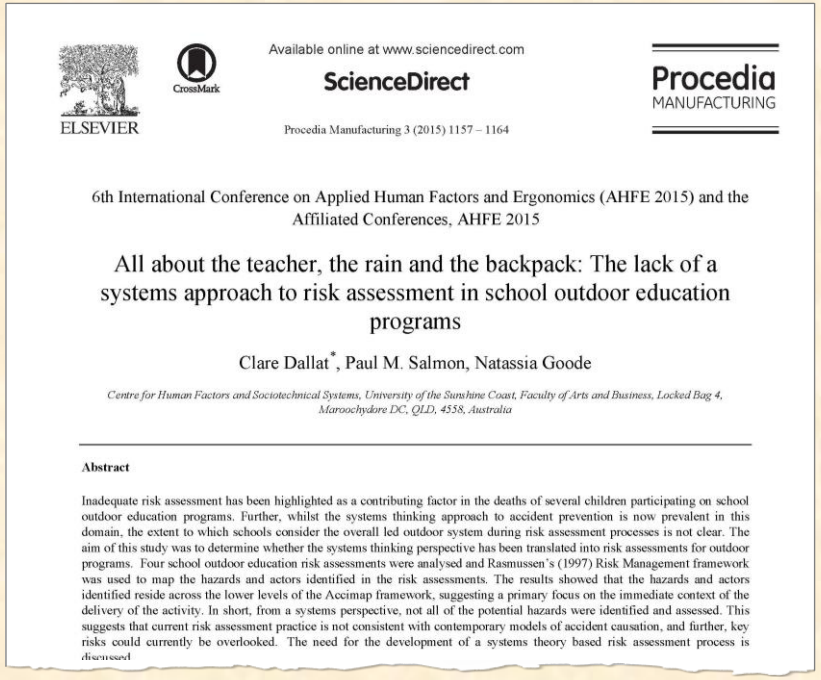
Limitations of Risk Assessments



- Annex A Adventure tourism risk management process
  - A.1 General
  - A.2 Establishing the context
  - A.3 Risk assessment
  - A.4 Risk treatment

- Does not correlate with what research in complex socio-technical systems and human factors in error causation tell us about how incidents occur
- Therefore ineffective as a comprehensive risk management tool or stand-alone indicator of good risk management

"...current risk assessment practice is not consistent with contemporary models of accident causation."



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6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015

All about the teacher, the rain and the backpack: The lack of a systems approach to risk assessment in school outdoor education programs

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Abstract

Inadequate risk assessment has been highlighted as a contributing factor in the deaths of several children participating on school outdoor education programs. Further, whilst the systems thinking approach to accident prevention is now prevalent in this domain, the extent to which schools consider the overall led outdoor system during risk assessment processes is not clear. The aim of this study was to determine whether the systems thinking perspective has been translated into risk assessments for outdoor programs. Four school outdoor education risk assessments were analysed and Rasmussen's (1997) Risk Management framework was used to map the hazards and actors identified in the risk assessments. The results showed that the hazards and actors identified reside across the lower levels of the Accimap framework, suggesting a primary focus on the immediate context of the delivery of the activity. In short, from a systems perspective, not all of the potential hazards were identified and assessed. This suggests that current risk assessment practice is not consistent with contemporary models of accident causation, and further, key risks could currently be overlooked. The need for the development of a systems theory based risk assessment process is discussed

Culture

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What is Culture?

An integrated pattern of individual and organizational **behavior**, based on shared **beliefs and values**

Behavior Springs from Beliefs and Values

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Actions--like leaves and stems, visible

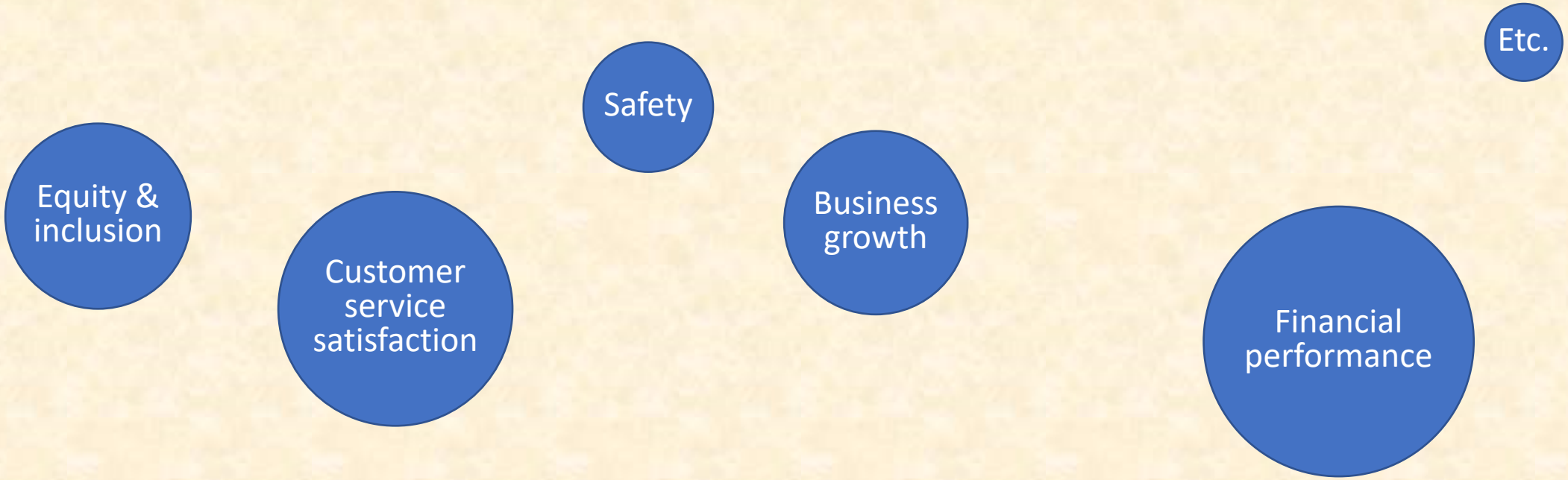
Values and **beliefs**--like soil and roots, invisible

Safety Culture

What is *Safety Culture*?

The influence of organizational culture on safety

Specifically: the values, beliefs, and behaviors that affect the extent to which safety is emphasized over competing goals



Evaluating Safety Culture

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Characteristics of Positive Safety Culture

Leadership From the Top. Top leaders actively support safety.

Inclusion. Everyone is involved in safety.

Suffusion. Safety spreads through all values, tasks, & processes.

Culture of Questioning. It's okay to question authority on safety.

Collaboration. Staff work together on safety.

Effective Communication. Staff communicate about safety between all levels.

Just Culture. Individuals are not punished for honest mistakes.

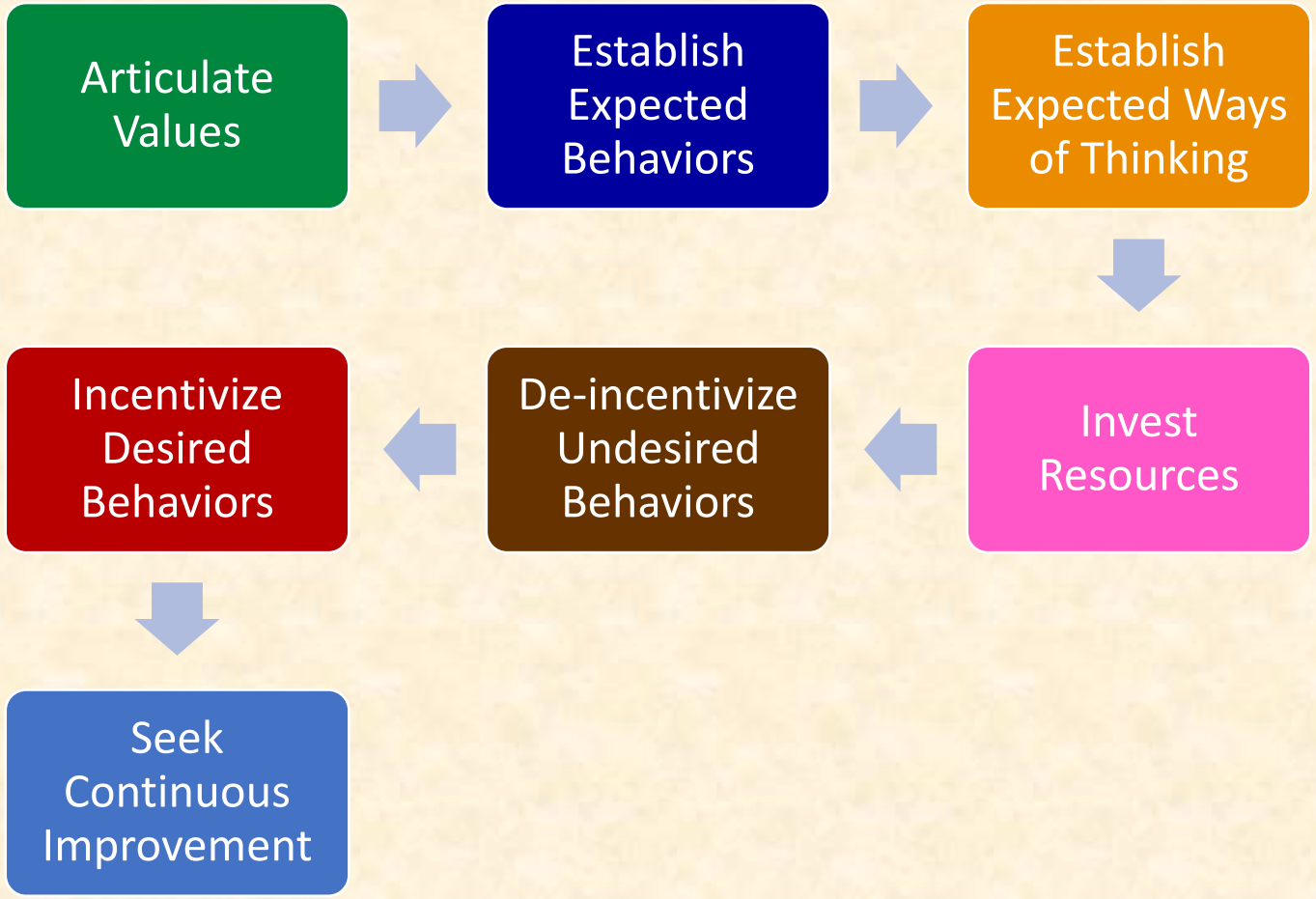
Safety culture survey at viristar.com/cotr-mast-risk

Fostering a Culture of Safety

Shift behaviors, by shifting beliefs and values

This is a change management process

Shifting Culture



Just Culture

When an error occurs:

- Don’t automatically blame the person
- Look for the underlying systems that led to the error

Focus is on *what went wrong*, not *who caused the problem*

This empowers people to report incidents, and helps the organization resolve the underlying safety issues

Complex STS Theory: Application

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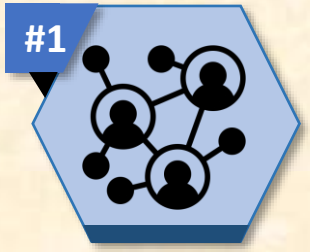
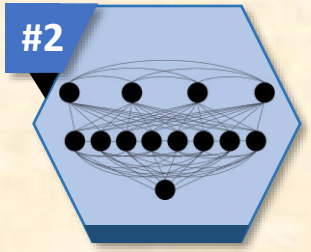
How do we apply complex socio-technical systems theory to adventure tourism?



RESILIENCE ENGINEERING



CONSIDER
ALL RISK DOMAINS

CONSIDER ALL RISK
MANAGEMENT INSTRUMENTS

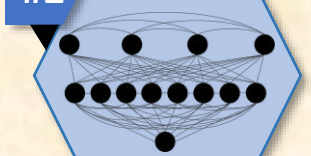
CONSIDER
STRATEGIC RISKS

SYSTEMS-INFORMED
STRATEGIC PLANNING

#1

Resilience Engineering

#2



Consider All Risk Domains

#3

Consider All Risk Management Instruments

#4

Consider Strategic Risks

#5

Systems-Informed Strategic Planning

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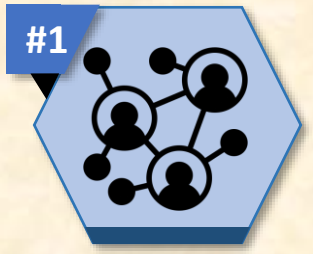

RESILIENCE ENGINEERING

CONSIDER ALL RISK DOMAINS

CONSIDER ALL RISK MANAGEMENT INSTRUMENTS

CONSIDER STRATEGIC RISKS

SYSTEMS-INFORMED STRATEGIC PLANNING

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Resilience engineering: create the conditions to withstand unanticipated problems

How?

1. Extra Capacity
2. Redundancy
3. Integrated Safety Culture
4. Psychological Resilience

Extra Capacity

- Backup staff available
- Backup equipment available
- Staff trained to operate at level higher than conditions normally require—e.g. Class IV paddler to lead Class III whitewater

Redundancy

- Multiple ways to identify emerging safety issues
- Multiple leaders per group
- Multiple leaders trained in first aid
- Participants trained in first aid, emergency response if leaders incapacitated
- Multiple emergency telecom devices
- Multiple emergency evac options

#1 RESILIENCE ENGINEERING

#2 CONSIDER ALL RISK DOMAINS

#3 CONSIDER ALL RISK MANAGEMENT INSTRUMENTS

#4 CONSIDER STRATEGIC RISKS

#5 SYSTEMS-INFORMED STRATEGIC PLANNING

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Integrated Safety Culture

- Balancing rules-based safety with allowing staff to use their judgement

Psychological Resilience

- Recruiting, hiring, training and retaining staff who have positive attitude towards challenge

#1 Resilience Engineering

#2 **Consider All Risk Domains**

#3 Consider All Risk Management Instruments

#4 Consider Strategic Risks

#5 Systems-Informed Strategic Planning

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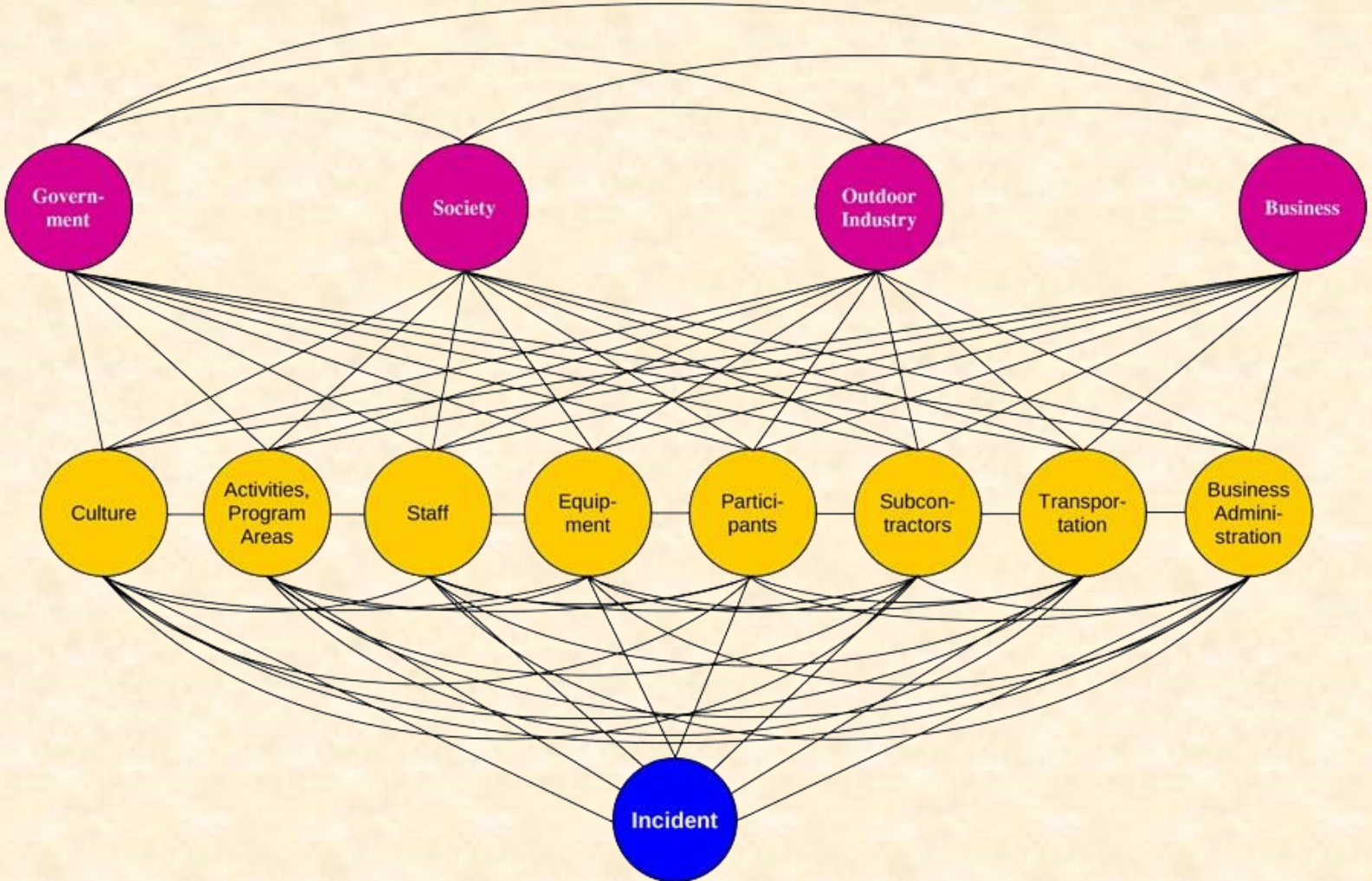

Examples:

- Just culture
- Comprehensive new activity/location/ population planning
- Evaluate all domains in incident analysis, incident reviews, risk management reviews

#1 Resilience Engineering

#2 Consider All Risk Domains

#3 **Consider All Risk Management Instruments**

#4 Consider Strategic Risks

#5 Systems-Informed Strategic Planning

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- Risk Transfer
- Incident Management
- Incident Reporting
- Incident Reviews
- Risk Management Committee
- Medical Screening
- Risk Management Reviews
- Media Relations
- Documentation
- Accreditation
- Seeing Systems

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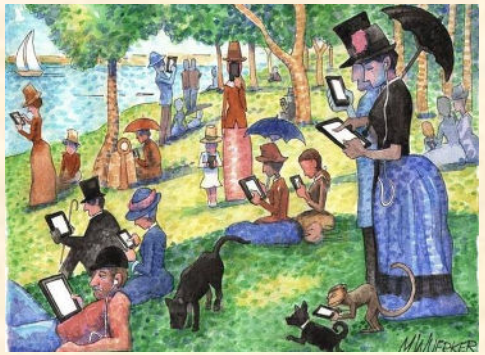
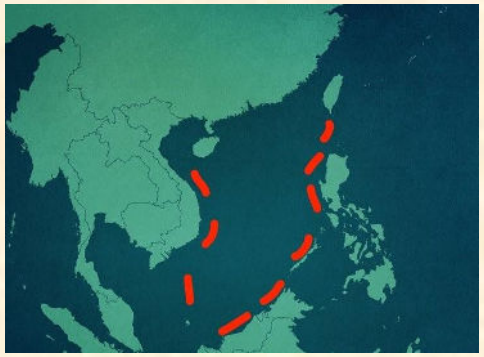
Demographic, Market and Social Shifts



Geo/Political Conflict and Instability



Climate Crisis

Legal trends & precedents

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Pre-mortem

- Assume a catastrophic failure has occurred
- Individually brainstorm causes of the failure
- Combine causes into one list
- Review, assess, and prioritize causes
- Using this information, strengthen risk management systems

Complex STS Theory: Application

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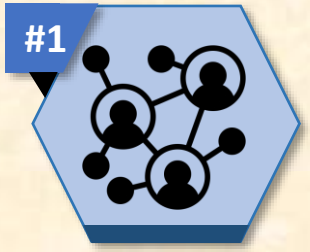
How do we apply complex socio-technical systems theory to adventure tourism?



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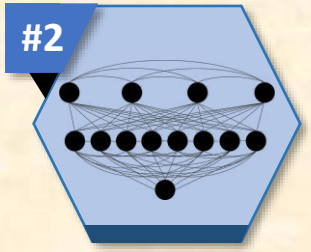

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Self-Assessment

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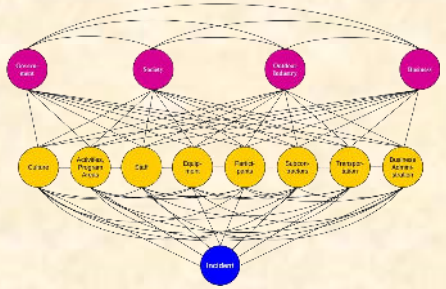
Complete self-assessment 2 at viristar.com/cotr-mast-risk to evaluate the extent to which your program employs risk management models, theories and systems-informed design in its risk management infrastructure:

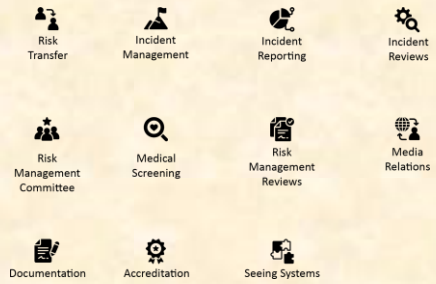
Uses current models of incident causation/prevention



Employs complex STS theory in safety system design

Identifies and manages specific risks in each risk domain

Employs all applicable Risk Management Instruments



Employs principles of resilience engineering

Addresses strategic risks