
# SCIRA: A Risk System Management Tool

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# Bottom line:

1. Role coupling and complexity plays in errors and system resilience.
2. SCIRA as a tool to measure system resiliency.
3. Recognize leverage points for improving system resilience and organizational performance.

# Agenda

- SCIRA worksheets
- Systems for organizing risk planning
- Coupling and Complexity
- SCIRA as a risk system management tool

# SCIRA worksheets

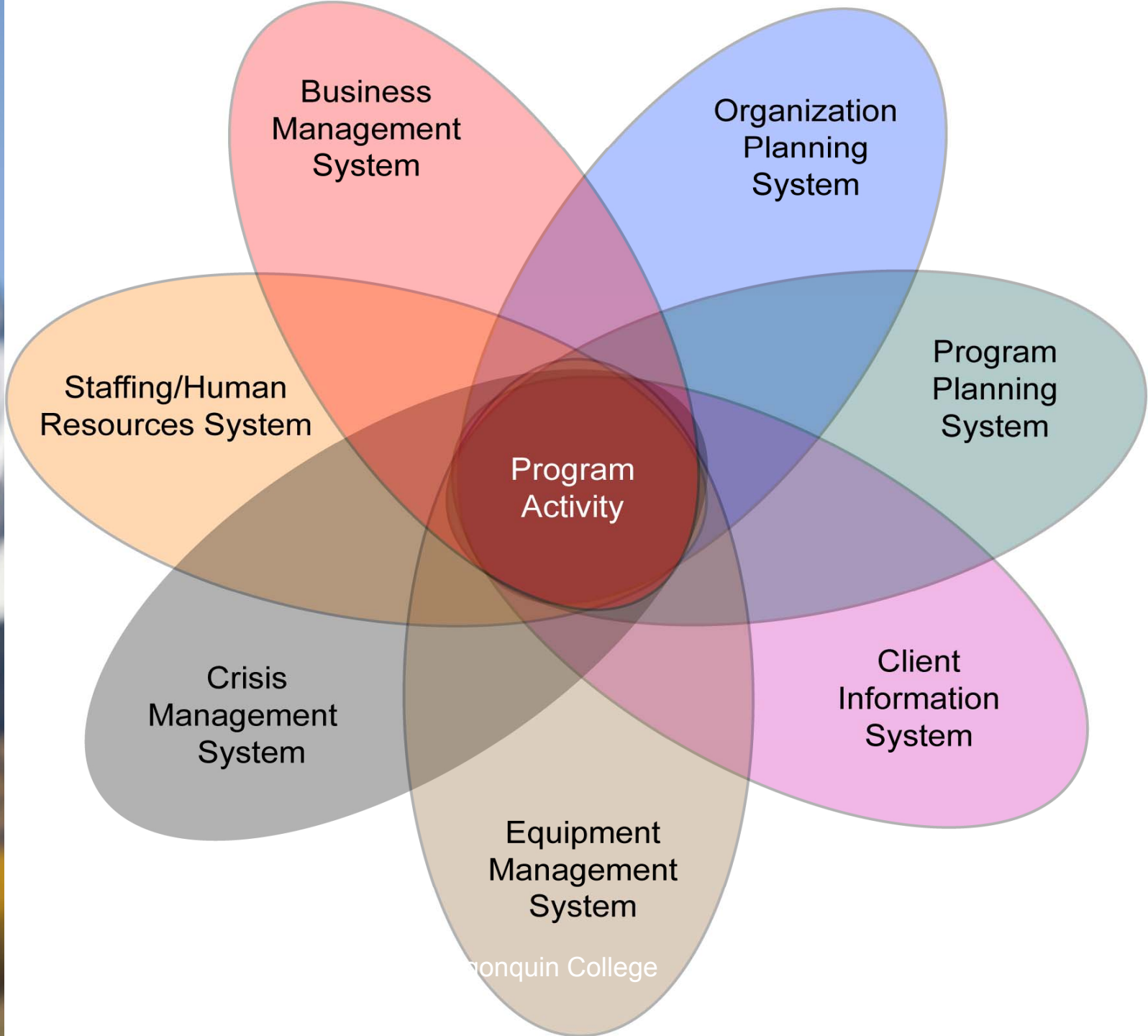
- 5 minutes to fill in worksheets
- Score 1-5 on each

- *Goal: familiarize (accuracy secondary)*

*Full article and index factor interpretation:*
*www.riskmanagementconsulting.ca*

# Managing Risk

## Systems Planning for Outdoor Adventure Programs



# Systems Organizing Risk Planning

Trigger/event based:

- Field based
- History / experience based

System based:

- Top down / bottom up
- Risk tolerance based

# Systems Organizing Risk Planning

# Scope and language:

***System:*** *an organized and highly integrated arrangement of parts operating towards a specific goal.*

***Risk management*** *is a systems based approach to sustainably managing uncertainty within an operating environment.*

# Measuring System Resiliency: Error Management:

Active errors:

- Guide slips, lapses, mistakes
- 'sharp end'
- Focus of trigger/event based RM

Latent errors:

- Dormant, long term conditions
- 'blunt end'
- Focus of systems based RM

# Measuring System Resiliency: Latent / System errors

"Be suspicious of operator error…" as it is often the easy target in an unclear scenario

60-80% of *system errors* are blamed on the operator (Perrow, 1990)

"…latent errors pose the greatest threat to the safety of a complex system." (Reason, 1990)

# Measuring System Resiliency: *Coupling (Cp)* / Complexity

| Loosely Coupled | Tightly Coupled |
|---|---|
| Slack: time, resources, options | No slack |
| Time between decisions | No time, rapid succession |
| Time to correct | No time to correct |
| Many options per decision | Few options |
| | |
| Flatwater paddling | Continuous class V |

Operational Coupling:
= Fast paced, high volume, tightly managed

# Measuring System Resiliency: Coupling / *Complexity (Cx)*

| Linear system | Complex system |
|---|---|
| Easy to explain | Detailed, complicated |
| Single goal or process | Multiple goals, processes |
| Predictable outcome, even if unplanned | Unanticipated interactions when sequence fails |
| Failure can be isolated | Failure compounding |
| | |
| Climbing bolted 5.6 route | Exploratory first ascent of remote mountain range |
| Owner/operator canoe trip company | Large scale international adventure company |

# Measuring System Resiliency: Failure Detection (fD)

- Experience under stress = ability to recognize failure
- *Failure detection does not directly prevent accidents or injuries*

# SCIRA

- Quantifies system complexity
- Indicator of system failure potential

↑coupling + ↑complexity = ↑risk of failure

(Perrow, 1990)

*NOT a measure of system efficacy!!*

# SCIRA values

Cp x Cx x fD

Cp = coupling (↓)
Cx = complexity (↔)
fD = failure detection (↓)

SCIRA = (Cp) x 2(Cx) x 0.6(fD)

# SCIRA values

- Samples from delegates

# SCIRA can:

1. Assess system complexity and system failure potential.
2. Target system improvements and models system change.
3. Benchmark system complexity against other programs or operations.

# Leverage points:

- Start here for system improvements
  - Research based
- Minimize ‘5’ scores:
  - is it fixed or open to change?

# To do list / key learning

1. Cp: align w risk tolerance
   purposeful slack
2. Cx: recognize complexity (creep)
   manage efficiency v. complexity
3. fD: red flag
   test, train, info share

# Bottom line:

1. Role coupling and complexity plays in errors and system resilience.
2. SCIRA as a tool to measure system resiliency.
3. Recognize leverage points for improving system resilience and organizational performance.


# References / further reading

Jackson, J. (2009) *SCIRA: A Risk System Management Tool*, available at www.riskmanagementconsulting.ca

Jackson, Heshka, Cruchet (2010) *Managing Risk, Systems Planning for Outdoor Adventure Programs*, Direct Bearing Inc., Palmer Rapids, ON.

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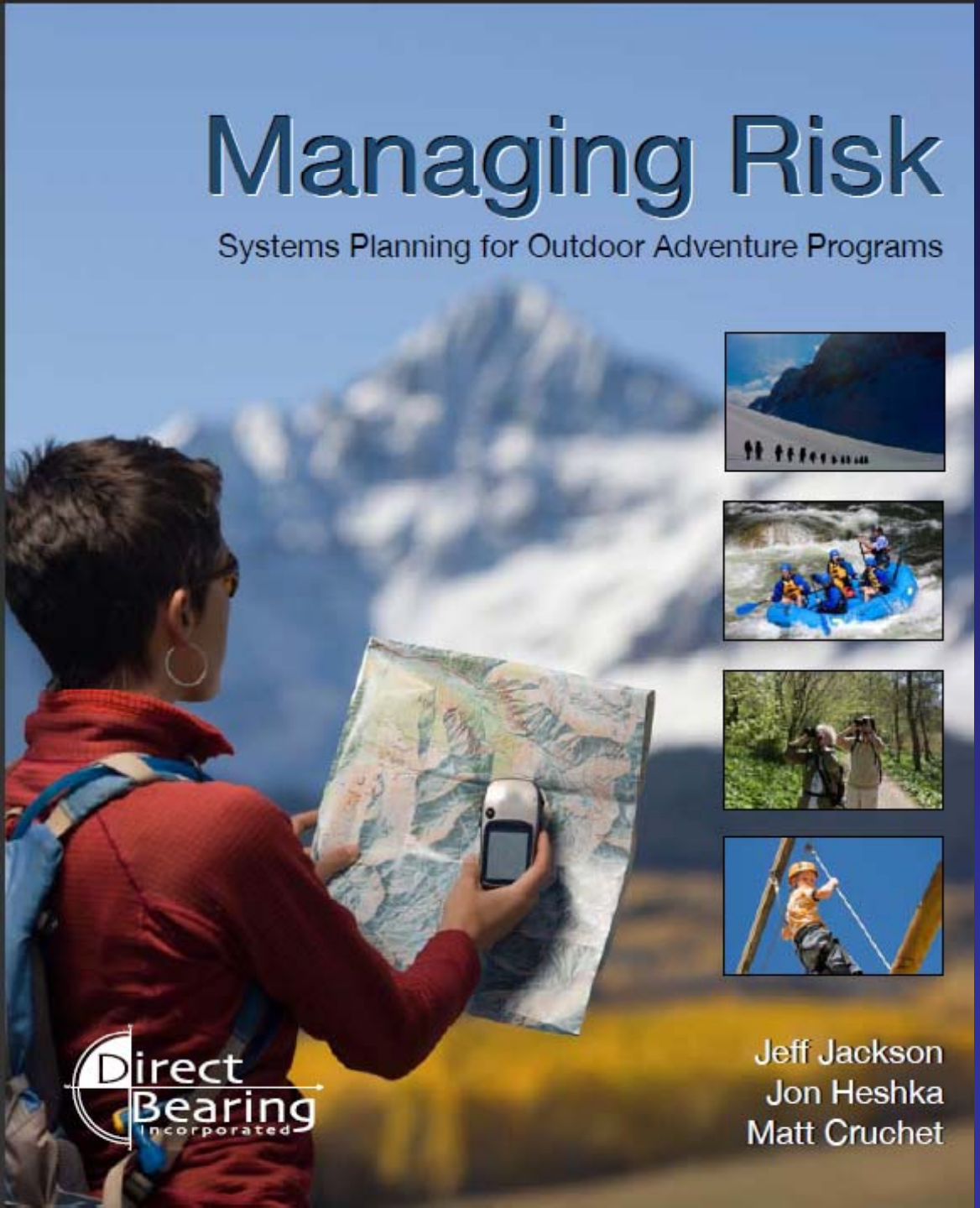


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