Methods for Assessing Risk

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Our speakers

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Prior to joining RIMS in 2010, Carol held a number of progressively responsible risk management positions in the customer care, communications, manufacturing, defense, and insurance industries. A Miami University graduate, she serves on its Center for Business Excellence advisory board and is vice chair of the U.S. Technical Advisory Group for ISO 31000 standards. In 2009, she received RIMS’ prestigious Harry & Dorothy Goodell Award. In 2011, Treasury & Risk acknowledged her as one of its 100 Most Influential People in Finance.

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Steve is a Director of T3 Australia Pty Ltd, a training company focussed on business management training and executive coaching, and principal consultant in risk management, business continuity, product recall and crisis management for consumer good companies. A qualified teacher by training, Steve’s work experience spans the Australian government (counter-terrorism), where he worked with the FBI in establishing the Olympic Intelligence Centre for the 1996 Olympics. He also supported the NSW Police as Director, Olympic Intelligence Centre before being recruited by The Coca-Cola Company. Steve’s standards development work includes the International Standard for Product Recall (ISO 10393) and its related standard – the International Standard for Product Safety (ISO10377), as well as the U.S Standard for Organisational Resilience.
What to Expect

- The Characters
- The Plot
- The Story Unfolds
- Solutions and Suggestions
- The Outcome?
- Are Organizations Really Doing This?
A Risk Management Saga

THE CHARACTERS
Our Hero

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So what is the problem?

THE STORY UNFOLDS ...
What exactly is the **RISK**?
You know, this happened a few times before...

A quick repair and all will be forgotten.

What about our reputation? That YouTube video has over 150,000 views.

Let’s have risk management assess the risk.
I wonder if those consultants I met at that RIMS event can help?
IEC/ISO 31010:2009 Risk Assessment Techniques

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Techniques can be:

- qualitative
- semi-quantitative
- quantitative
- combination
- predictive
- post-action
Risk Assessment Considerations

When considering risks for relevance and importance, the following “material” variables can help:

- **Likelihood**: The frequency, relative frequency, or probability
- **Severity**: The impact of the consequence (may be expressed in multiple terms: financial, human, reputation, property, ability to continue operations, etc.)
- **Timing**: Speed to onset (velocity), when the event/trend occurs (trigger), how long it lasts (duration)
- **Vulnerability**: susceptibility related to the entity’s preparedness, agility, and adaptability
- **Expected value**: Mean, mode, or median for forecasts, budgets
- **Variability**: Range, standard deviation, and probability distribution
- **Ratios**: How much of one thing there is compared to another thing.

Source: RIMS Workshop: *ERM Accelerating Theory Into Practice*
## Types of Risk Assessments

<table>
<thead>
<tr>
<th>Identify</th>
<th>Analyze</th>
<th>Evaluate</th>
</tr>
</thead>
</table>
| • Brainstorming  
  • Structured interviews/what ifs?  
  • Checklists | • Consequence/likelihood matrix  
  • Root cause  
  • Cause and effect analysis  
  • Influence diagram  
  • Bow tie analysis  
  • Monte Carlo simulation | • ALARP  
  • Solution effect analysis  
  • Force field analysis |

**More Qualitative**

**Management Risk Perspectives**

**Technical Risk Perspectives**

**More Quantitative**
Brainstorming – Open Ended

SAMPLE RISK ASSESSMENT QUESTIONS

- What keeps you up at night?
- What might impede your ability to serve our customers or significantly impair your objectives?
- What risks should we consider over the next 12-18 months?
- What risks will be important for our sustainability ten years from now?
- What are the consequences to the organization if the risk occurs?
- What are the early warning signs that the risk may occur?

Source: RIMS Workshop: ERM Accelerating Theory Into Practice
SAMPLE “WHAT IF” INTERVIEW QUESTIONS

- Our acquisition due diligence process fails to properly assess and identify human resources and employee benefit issues that could potentially lead to major earnings-per-share losses?
- A disgruntled employee misappropriated confidential information (ours or a client’s) and published that information on an open web-site?
- Our assets were confiscated or nationalized by a change in government control in [country name(s)]?
- We failed in a major product launch/client implementation?
- Significant government regulations were enacted that impeded our growth in [our industry]?
- Our competition launched a cutting-edge technology that provided greater scalability, simpler integration, and cost less than our products?
- Everything happened at once?

Source: RIMS Workshop: ERM Accelerating Theory Into Practice
Checklists

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<tr>
<th></th>
<th>Check all that apply (✓)</th>
<th>Controls adequate (Y/N/NA)</th>
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</thead>
<tbody>
<tr>
<td>Quality of raw materials</td>
<td></td>
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<tr>
<td>Adequacy of design</td>
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<tr>
<td>Fabrication completion</td>
<td></td>
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<td>Assembly capability</td>
<td></td>
<td></td>
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<tr>
<td>Parts availability</td>
<td></td>
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<tr>
<td>Maintenance frequency</td>
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<td></td>
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<tr>
<td>Human competency</td>
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All great approaches for identifying risk. This checklist technique may work best for this situation. But how do we analyze and evaluate the risk?
Said Another Way

Define
- What is the problem or issue?
- What is the potential outcome?

Analyze
- What is the evidence?
- What are the criteria?

Solve
- How can this be prevented?
- How can this be controlled?
- Can this be used predictively?

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Are There Existing Risk Controls?

Source: RIMS Workshop: *ERM Accelerating Theory Into Practice*

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Consequence/Likelihood Matrix

Other potential criteria might include:

- Time to onset (velocity, immediacy, etc.)
- Duration of impact
- Capacity of the organization to absorb
- Controllability
- Visibility (for monitoring)
- Interdependencies
- Readiness
- Degree of confidence

Source: RIMS Strategic Risk Management Implementation Guide 2012
Expert Elicitation

- Expert elicitation is a structured process to elicit subjective judgments from experts.
- It is widely used in quantitative risk analysis to quantify uncertainties in cases where there are no or too few direct empirical data available to infer on uncertainty.


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Root Cause

Tire Falls Off While Driving
Wheel Nuts Loose
Wheel Nuts Not Put on Properly
Employees Not Trained
We Do Not Have Training Program

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Cause and Effect Analysis

Source: RIMS Executive Report  Root Cause Analysis: More Than Just Cleaning Up the Mess

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Bow Tie Diagram

Source: RIMS Executive Report  Root Cause Analysis: More Than Just Cleaning Up the Mess
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Monte Carlo Simulation

Source: RIMS Executive Report Exploring Risk Appetite and Risk Tolerance. All rights reserved.

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So what now?

SOLUTIONS AND SUGGESTIONS
ALARP = As Low As Reasonably Practicable
Solution Effect Analysis

Source: RIMS Executive Report  Root Cause Analysis: More Than Just Cleaning Up the Mess
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Force Field Diagram

**Forces for**

- 4 Customer loyalty
- 4 Customer referrals
- 3 Improved morale
- 3 Greater efficiencies
- 2 Reduce claims costs

**Total - 16**

**Forces against**

- 2 More supervision
- 4 Training costs
- 1 Added administration
- 3 Equipment costs
- 2 Bonus costs

**Total - 12**

**INITIATIVE**

Institute a quality management program for tire repair

Train, empower and reward supervisors and technicians for error-free service.

Source: RIMS Executive Report  Root Cause Analysis: More Than Just Cleaning Up the Mess
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Divergent Paths

Source: RIMS Strategic Risk Management Implementation Guide. All rights reserved.

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If What, Then What, So What?

THE OUTCOME?
You Are the Consulting Team

• Choose one or more risk assessment methods. Be prepared to explain why you chose the method(s).

• Discuss how you would advise our hero to assess and respond to management’s “What is the risk?” question.

• You can make as many assumptions as you want, but you will need to document them.
Types of Risk Assessments

Identify
- Brainstorming
- Structured interviews/what ifs?
- Checklists

Analyze
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- Monte Carlo simulation

Evaluate
- ALARP
- Solution effect analysis
- Force field analysis

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In Response to the Question, “What’s the Risk?”
Our Hero Should Recommend

1. Accept – the risk is within the company’s capacity to absorb
2. Avoid – sell the truck rental business
3. Mitigate – recall all trucks for inspection and repair
4. Transfer – increase insurance program limits of liability
5. Exploit – Establish insurance captive to sell insurance to truck renters
Conclusions

• Risk assessments provide the foundation for risk management by systematically evaluating risk to support a factual basis for informed decision making.

• Risk assessments can be accomplished in varying degrees of detail. The level of detail is dependent upon the type of risk, purpose of the analysis, resource limitations, and the information available to the assessor(s).

• At times, risk management teams underutilize the number and types of risk assessment methods available to them.

• Risk may be assessed using a quantitative computational approach or a qualitative subjective judgmental approach, or a combination of both.
ARE COMPANIES REALLY DOING THIS?
Risk Estimation
Does the 5 x 5 (or 4 x 6) have a place?

<table>
<thead>
<tr>
<th>Probability</th>
<th>Severity</th>
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<th></th>
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<td>Moderate</td>
<td>High</td>
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<tr>
<td>Possible</td>
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<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
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</tr>
<tr>
<td>Probable</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
<td>Extreme</td>
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<tr>
<td>Highly probable</td>
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<td>High</td>
<td>Extreme</td>
<td>Extreme</td>
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<td>Almost inevitable</td>
<td>Moderate</td>
<td>High</td>
<td>Extreme</td>
<td>Extreme</td>
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Truck Accidents

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Infinity Cables

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Food Safety

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Hazards of Hazard Analysis – Sanbrook Recall

• Under mounting pressure from the ACCC, Sanbrook Brands announces an immediate “voluntary” recall of all Happy Baby Softfeel Latex dummies nationally

• Sanbrook conducted tests which a company spokesman said “proved the dummies were safe”.
  – “A very small number of products were found to have a risk of teat separation, with reported incidents at a very low rate of 0.000016, or 1.6 soothers in every 100,000 sold.”

• February 2011, Sanbrook appoints liquidators
ACCC Product Safety Nomograph

Severity

Probability

Hazard Recognition

Availabilty

Hazard

Risk

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Application to Consumer Goods Safety

- Severity/Consequences
  - Vulnerable groups
  - Reputation, Financial, Regulatory Consequences
- Probability
  - Intended use, foreseeable use, foreseeable misuse
  - Problems of good data, injury statistics
- Availability
  - Distribution of product
  - Common products – every household
- Recognition of hazard
- Allergens
- Contaminants
- Age and lifecycle of product
  - Assembly and installation
  - Second hand goods
  - Counterfeit goods
Key Messages

• Risk management methodologies necessary
  – Consistent application
  – Engagement
  – Culture
  – Appropriate resourcing and action

• Risk management methodologies need to be customised to suit each industry

• Need (ultimately) to be expressed in plain English – so decision-makers can get involved!
Questions and Final Comments

How did our hero fare?