



Collaborative Risk Management

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Collaborative Risk Management



Method: PRA



Process: Collaborate



Mitigate: E.g., Train and Exercise



ROI Informs RM Decisions

Outline

- Method and Process
- **Risk Analysis (Analyze T, C, V)**
- **Risk Results ($R = T \times C \times V$)**
- **Mitigation Strategy Impacts**
- **Costs and ROI**
- Supporting Analysis Tools

My Objective

- Provide you with a framework to provide leaders with a sound basis for investing people and \$ to effectively manage risk
 - Determine level of analysis, method, process
 - Operationalize risk analysis
 - Assess impact of risk mitigation strategies (RMS)
 - Estimate Return on Investment (ROI) of RMS
 - Analysis and collaboration tools

Method and Process

- Method: Probability Risk Analysis where:
 - Risk = Threat X Consequences X Vulnerabilities
 - Risk Mitigation Strategy Analysis = Risk Mitigation Strategy Analysis of Impact on Risk (reassess T x C x V)
 - ROI = (Risk – Mitigated Risk)/Cost
- Process - Collaborate: Facilitate input from security staff, operations, law enforcement (for threat and mitigation strategies) and leadership
- Why use a collaborative process?

Level of Analysis Example: Threat

In any case try to define the threat as a scenario.

For example:

One shooter gains access to the mega-church during services and shoots people to satisfy motivation for the attack

Who?
What?
When?
Where?
Why?

Medium:

- WV3: worker-on-worker
- WV5: terrorism
- WV4: personal relationship
- WV1: attack by outsiders

Simple: Active Shooter

Detailed:

- Attack mode capability
 - Training
 - Equipment
- Intent
 - Attack consequences
 - Atk Tgt Type

Simple to Complex
Level of Analysis

Relative Threat Analysis

- Scenario: One shooter gains access to the mega-church during services and shoots people to satisfy motivation for attack.

Threat Assessment - 5 Year	Likelihood	Likelihood
Active Shooter Attack	Low	5%

Risk Scenarios Assessment - 5 Year	Likelihood	Likelihood
WV3: worker-on-worker	Medium	10%
WV5: terrorism	Very Low	3%
WV4: personal relationship	Low	5%
WV1: attack by outsiders	Very Low	1%

Question for leadership: “Does this threat analysis make sense?”

If yes proceed, if no, revise until accepted.

Threat Scenario Assessment					
Risk Scenarios Assessment	Threat Cap	Threat Intent	Threat Presence	5 Year Likelihood	Overall Threat
WV3: worker-on-worker	50%	90%	100%	10%	55%
WV5: terrorism	75%	75%	25%	5%	19%
WV4: personal relationship	50%	50%	50%	10%	23%
WV1: attack by outsiders	50%	25%	50%	5%	11%

Vulnerability Analysis

Assessed Current Vulnerability							
Risk Scenarios Assessment	Interdiction				Target Hardness	Achievability	Vulnerability
	Detect	Decide	Engage	Defeat			
WV3: worker-on-worker	75%	50%	75%	25%	0%	100%	93%
WV5: terrorism	25%	25%	50%	25%	0%	100%	99%
WV4: personal relationship	50%	50%	75%	25%	0%	100%	95%
WV1: attack by outsiders	25%	25%	25%	25%	0%	100%	100%

- Consider breaking down Vulnerability to INTERDICTION (DETECT, DECIDE, ENGAGE, DEFEAT), HARDNESS, ACHIEVABILITY
- Allows you to analyze solutions contributions to each phase of interdiction
- Defeat can be owner operator or LEA if attacker can be delayed
- Each phase must be accomplished in order to interdict
- Here Vulnerability = $1 - (D \cdot D \cdot E \cdot D) \cdot (1 - th) \cdot ACH$
- Review results with leadership ... start with the fact that D,D,E,D must all be successful...

Consequence Analysis

➤ From: Very Low to Very High or ...

Assessed Consequences Converted to \$M						
Risk Scenarios Assessment	Expected Death/Injury	Death/Injury \$7M ea	\$M Impact	Ops Delay (\$M/Mo)	Image (\$1-10M)	Consequences
WV3: worker-on-worker	5	35	0.05	1	10	46
WV5: terrorism	10	70	0.05	1	1	72
WV4: personal relationship	2	14	0.05	1	10	25
WV1: attack by outsiders	5	35	0.05	1	1	37

- Convert Consequences to \$\$\$
- Consider: Death and Injury, \$ Impact Loss, Operations Delay \$ Impact, Image/Reputation \$ Impact on bottom line
- Review results with leadership

Risk Results

➤ Risk = T x C x V

Risk Scenarios Assessment	Overall Threat	Consequences	Vulnerability	Assessed Risk
WV3: worker-on-worker	55%	46	93%	24
WV5: terrorism	19%	72	99%	14
WV4: personal relationship	23%	25	95%	5
WV1: attack by outsiders	11%	37	100%	4

- This establishes the RELATIVE risk of each scenario
- Question for leadership: “Are these risks acceptable?”
- In not, analyze Risk Mitigation Strategies for each
- Review risk analysis results with leadership

Mitigation Strategy Impacts

- Start by brainstorming candidate solutions to reduce vulnerabilities for each scenario
- Select most promising for mitigation impact analysis and ROI analysis
- In this case: Staff Training and Exercises

Mitigation Analysis	Strategy: Staff Training and Exercises						
Relative Risk Scenarios	Detect	Decide	Engage	Defeat	Strategy Vulnerability	Current Vulnerability	Impact V Delta
WV3: worker-on-worker	98%	98%	90%	50%	57%	93%	-36%
WV5: terrorism	25%	25%	50%	50%	98%	99%	-1%
WV4: personal relationship	90%	90%	90%	50%	64%	95%	-32%
WV1: attack by outsiders	25%	25%	50%	50%	98%	100%	-1%

Mitigation Strategy Analysis

- We considered four mitigation strategies:
 - Staff Training and Exercises
 - Access Control
 - Designate Armed/Trained Staff
 - Smart Camera/Sensors System

Strategy / Solution Risk Mitigation	Assessed Risk	Staff Training and Exercises	Access Control	Designate Armed/Trained Staff	Smart Camera/Sensors System
WV3: worker-on-worker	24	14	16	4	16
WV5: terrorism	14	14	9	6	9
WV4: personal relationship	5	4	4	1	4
WV1: attack by outsiders	4	4	3	2	3

Costs and ROI Analysis

- Estimate the costs of each Strategy/Solution over the period of the analysis (e.g., 1 yr, 5 yr)

ROI for Mitigation Strategy by Scenario (RM/\$)	Staff Training and Exercises	Access Control	Designate Armed/Trained Staff	Smart Camera/Sensors System
Cost Estimate / 5 years in \$K	\$ 30	\$ 75	\$ 50	\$ 25
WV3: worker-on-worker	302	99	387	298
WV5: terrorism	4	65	161	196
WV4: personal relationship	60	24	82	72
WV1: attack by outsiders	2	20	49	60
Ave ROI	92	52	170	156

- Brief leadership and develop plan, assign responsibilities, monitor progress, reassess

Supporting Analysis Tools

- Simple spreadsheet (today's example)
- Complex spreadsheet (multi-sites)
- Web-based applications
 - Collaborative/survey based application
 - Risk and Compliance Based
- MS Access (e.g., IRAM)
- MS Access and Web Application (e.g., MSRAM)

RiskID[®] - Collaborative RM of a Wide Range of Risks

For each risk participant:

- Select type of impact
- Estimate Cost
- Identify causes and effects
- Result risk Profile for the Target ↓

The screenshot shows a risk entry in the RiskID system. At the top, there is a navigation bar with a back arrow, the number '13', a progress bar (red, orange, green), a 'New' dropdown menu, and a trash icon. Below this, there are filters for 'Organizational' and 'Cost'. The main title of the risk is 'Terrorist bombs the entrance of HQ'. Below the title, it says 'Updated at: 9/6/2017, 11:13:28 AM'. There are two sections: 'Causes (2):' with a plus icon, listing 'Reaction time too slow.' and 'No guards at the entrance doors.'; and 'Effects (2):' with a plus icon, listing 'Chaos in the building and streets.' and 'Deaths.'

1	Terrorist bombs the entrance of HQ.	13	
2	Cyber breach/ Service interruption	36	
3	Active shooter attack	28	
4	Financial disruption attack (block access to financial accounts)	12	

RiskWatch® Tools

- Risk Watch offers security, compliance and cyber focused analysis tools that all employ a collaborative process and extensive assessment options...



SecureWatch

AN ENTERPRISE RISK ASSESSMENT SOLUTION

Helps you develop comprehensive risk management strategies that guard against damages to revenue, loss of assets, brand erosion, and legal liability.

ComplianceWatch

A COMPLIANCE ASSESSMENT SOLUTION

An easy-to-use assessment tool that helps you meet regulatory requirements, prepare for audits, identify vulnerabilities, and manage your mitigation plan.

CyberWatch

AN INFORMATION SECURITY RISK MANAGEMENT SOLUTION

Provides a standardized process for identifying, assessing, mitigating and managing cyber threats and information technology risk.

Questions?

Objective: Provide you with a objective framework to provide leaders with a sound basis for investing people and \$ to effectively manage risk

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