

# Operational Security, Resilience & Sustainability

## Defense Industrial Base Critical Infrastructure Protection

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# Agenda

- **Introductions**
- **Definitions**
- **Pre-Simulation**
- **Risk of Supply, Demand, Process, Control, Environment, Economy**
- **Risk Management for Operations Professionals**
- **Post-Simulation**

# Introductions





## ■ Youngstown, OH

Operational Security, Resilience  
& Sustainability

April 2, 2009

Varkonyi, APU 4

# Learning Objectives

1. Understanding components in the trade-off among risk and efficiency
2. Understanding the concept of Risk Management within Enterprise Operations
3. Understanding the convergence of green supply chains with resilient operations

# Pre-simulation Definitions

<b>Risk</b>	<b>Group</b>
<b>Supply</b>	<b>A</b>
<b>Demand</b>	<b>B</b>
<b>Process</b>	<b>C</b>
<b>Control</b>	<b>D</b>
<b>Environment (Sustainability)</b>	<b>E</b>
<b>Economy</b>	<b>F</b>

# Definitions

<b>Risk</b>	<b>Definitions</b>
<b>Supply</b>	<b>Suppliers, Transportation, Disasters, Quality</b>
<b>Demand</b>	<b>Forecasts, Market turbulence, Quality</b>
<b>Process</b>	<b>Human capital, Identification of risk, Government</b>
<b>Control</b>	<b>Business Continuity, Measurement, Risk mitigation</b>
<b>Environment (Sustainability)</b>	<b>Energy, Toxins, Stewardship</b>
<b>Economy</b>	<b>Capital, Globalization, Infrastructure</b>

# Definitions

- **A risk process describes the steps you need to take to identify, monitor and control risk...defined as any future event that may prevent you to meet your team goals**
- **Risk control involves measurement, prevention, contingency planning and mitigation of the impact of disruptive events.**



# Definitions

- **Security is a condition that results from the establishment and maintenance of protective measures.**
- **Resilience builds on security by developing processes which guarantee the full security of assets.**
- **Sustainable supply chains meet the needs of the present without compromising the ability of the enterprise, and of future generations, to meet their own needs.**

# Supply Chain Risk Management (SCRM)

- Pressures on SCRM
- SC Vulnerability from growing global operations
- Increasingly volatile global economy
- Insufficient alignment of business objectives with business risk
- Lack of timely data
- Lack of alignment of business objectives among trading partners

Aberdeen SCRM – July 2008

# SCOR

- **The Organization's Environment**
- **What Does *Value at Risk - VaR* Mean?**
- **A technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities.**

# SCOR and SCRM

- **SCOR 9.0 includes Risk Management foundation utilizing SCOR Framework to map and define supply chain processes**

<b>Initial</b>	<b>Build</b>
<b>I</b>	<b>Discover</b>
<b>II</b>	<b>Analyze (Value-at-Risk (VaR))</b>
<b>III</b>	<b>Assess</b>
<b>IV</b>	<b>Mitigate</b>
<b>V</b>	<b>Implement</b>

# Supply Risk

- **Supplier capacity**
- **58% respondents indicated failure of suppliers' performance in 2008 Aberdeen survey**
- **Raw material shortages or price increases occurred for 49% of respondents**
- **Financial loss**

# Demand Risk

- 45% of respondents incurred unexpected changes in customer demand
- Postponement
- Mass customization
- Financial loss

# Process

- **39% of respondents experienced delayed shipments**
- **Best-in class companies are more likely to take pro-active action**
  - **Logistics capacity**
  - **Risk profile of suppliers**
  - **Fuel price risk**
  - **Risk profile of a country**
  - **Contingency planning for non-environmental catastrophic events**

# Process

- **Best in class are 80% more likely than laggards to train employees on disruption response procedures**
- **Human capital training**
- **Financial loss**



# Control

- **58% of participants see increased supply chain vulnerability due growing global operations**
- **Financial loss**

# Sustainability in the Supply Chain

- **Sustainability inter-related with security**
- **Impact of disruptions on shareholder depresses share value**
  - Ramp/rollout problems -12.7%
  - Production problems -12.4%
  - Development problems -11.1%
- **Source – Lehman Brothers 2003**

# Sustainability in the Supply Chain

## The life cycle process

- Trace back the carbon foot print of your suppliers
- Measure packaging materials
  - Save weight saves fuels; saves materials; saves money
- Re-use of components
  - Re-cycling must be against the energy required to disassemble, separate, etc
  - Xerox copier parts

# Sustainability in the Supply Chain

**SCOR Tools are processes linking together seamlessly from supplier to customer**

- **Plan – Balance resources with requirements to develop a course of action**
- **Source – Managing inventory, capital assets, schedule deliveries to meet planned or actual demand**
- **Make – Scheduling production to transform products into finished state, now includes processes specifically for waste disposal as part of Green SCOR**

# Sustainability in the Supply Chain

- **Deliver – Order management, warehouse management, engineer to order to meet planned or actual demand**
- **Return – Maintenance, repair, overhaul extending into post-delivery customer support**
- **Enable – Managing information relationships on which planning and execution of processes rely upon. When considering supply chain risk, the enabler identifies potential risk, assessing the probability and potential impact of the risk, and planning risk mitigation strategies.**

# Sustainability in the Supply Chain

## - Green SCOR

Plan	<ul style="list-style-type: none"> <li>✓ Stakeholder collaboration on environmental issues</li> <li>✓ Plans created to minimize energy use</li> </ul>
Source	<ul style="list-style-type: none"> <li>✓ Select vendors with Environmental Management System</li> <li>✓ Establish environmental partnerships with suppliers</li> </ul>
Make	<ul style="list-style-type: none"> <li>✓ Schedule peak production for off-peak energy demand times</li> <li>✓ Minimize packaging material</li> </ul>
Deliver	<ul style="list-style-type: none"> <li>✓ Route to minimize fuel consumption</li> <li>✓ Retrieve packaging material for re-use</li> </ul>
Return	<ul style="list-style-type: none"> <li>✓ Do not physically return product beyond economic repair</li> <li>✓ Take back product for recycling</li> </ul>
Enable	<ul style="list-style-type: none"> <li>✓ Implement an EMS and track environmental performance</li> <li>✓ Maintain equipment for fuel/energy efficiency</li> </ul>

# Sustainability in the Supply Chain

## Environmental Management System

- Part of a management system of an organization in which specific competencies, behaviors, procedures and demands of the implementation of an operational environmental policy of the organization are defined.\*
- ISO 14000 standards define EMS, Environmental auditing, Environmental labeling, Life Cycle Assessment

\* Wikipedia

# Sustainability in the Supply Chain

## **Sustainable Supply Chain Management (SSCM) reinforces shareholder value\***

- Ecological challenge – Intense global competition for natural resources forcing companies to improve eco-effectiveness of their supply chains
- Social challenge – Organization of your global challenge enables exercise of greater control, i.e.. Minimum pay or avoidance of child labor
- Economic challenge – Optimum SCM favorably impacts environment by consolidating freight capacity as one example
- Integration challenge – Position SCM within SSCM

**\* Accenture - 2007**



# Sustainability in the Supply Chain

## Triple Bottom Line for Booz Allen

- **People**
- **Planet**
- **Profit**
- **“The movement towards sustainable supply chain management is rooted in the concept of sustainability...”**

# Economy

- **55% of respondents see pressure on supply chain vulnerability from volatile global economy (Aberdeen)**
- **List Top Nine Challenges of Global Supply Chain Risk and Reward for 2009 (JP Morgan)**

# Economy

1. **SC Risk Mitigation in Economic Downturn**
  - a. **Supplier financial risk**
  - b. **Energy volatility**
  - c. **Uncertainty of economic recovery**
2. **Searching for Working Capital**
3. **Resurgence in Letters of Credit**
4. **Shortening the Supply Chain**

# Economy

5. Improved Speed and Savings in Mexico
6. More Free Trade Agreements and More Scrutiny
7. China Clamps Down on Oversight
8. New Import Challenges – The Amended Lacey Act
9. A Global Eye Toward Product Safety

# Risk Management for Operations Professionals

- **Think about supply chain risks**
  - How many of you had a supply chain disruption?
  - Did you quantify the damage from past disruptions?
  - Did you find your biggest vulnerabilities?

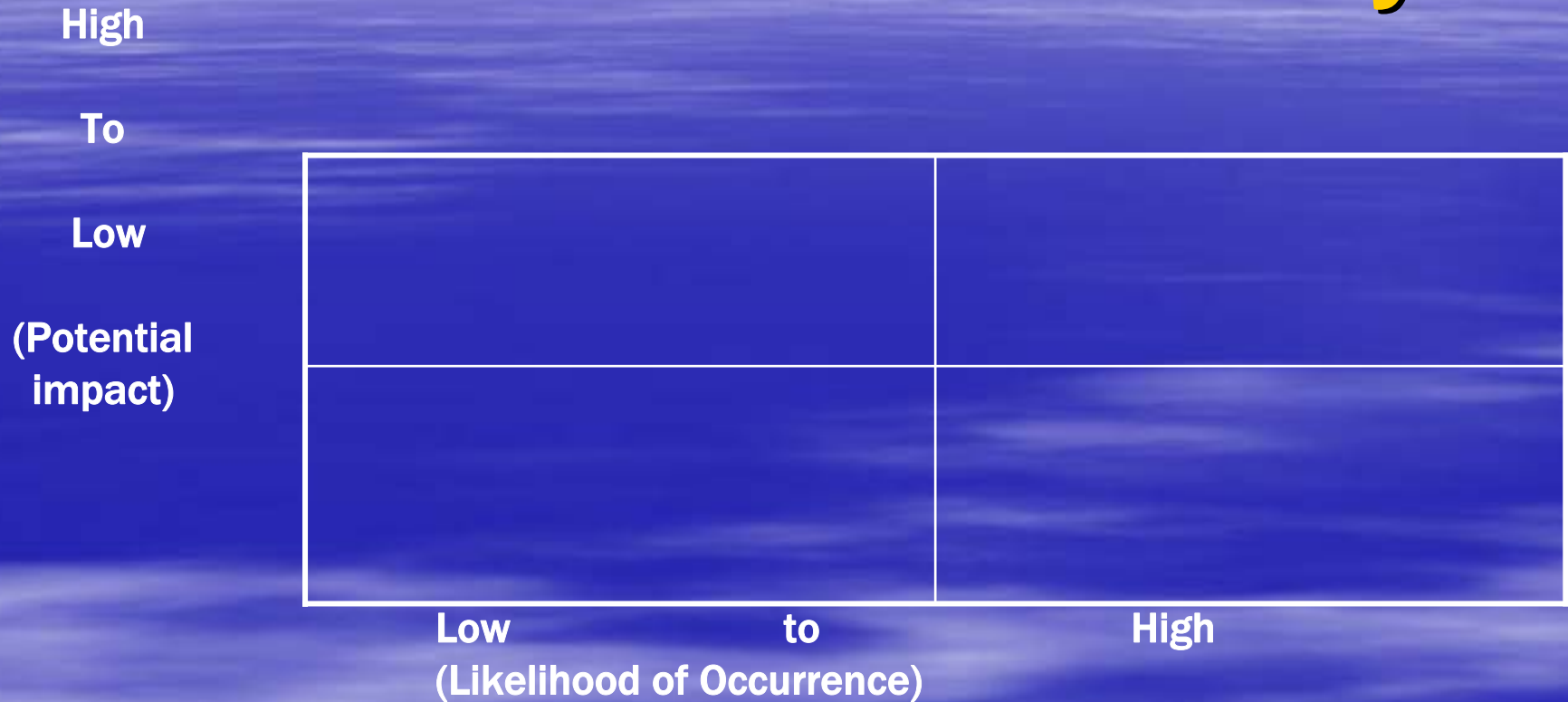
# Risk Management for Operations Professionals

- **Evaluate your supply chain infrastructure**
  - **Dual purpose technology enhancing information exchange?**
  - **Reduce exposure to supply chain risks from core internal processes (i.e. demand planning, delivery, inventory?)**
  - **Collaboration with trading partners, including regular supplier and enterprise ratings?**

# **Risk Management for Operations Professionals**

- **Enhanced staff awareness about dangers of supply chain disruptions**
  - **Observation**
  - **Pro-active processes**
  - **Responsive and flexible**

# Operational Security, Simulation Resilience & Sustainability





# Operational Security, Simulation Resilience & Sustainability

High  
To  
Low  
(Potential  
impact)

<b>Low Risk; Low Priority</b>	

Low to  
High (Likelihood of Occurrence)

# Operational Security, Simulation Resilience & Sustainability

High		
To	<b>Moderate Risk; moderate priority</b>	
Low		
(Potential impact)	<b>Low risk; low priority</b>	
	Low	High
	(Likelihood of Occurrence)	

# Operational Security, Simulation Resilience & Sustainability

High		
To		
Low	<b>Moderate risk: medium priority</b>	<b>Critical risk; high priority</b>
(Potential impact)	<b>Low risk; low priority</b>	
	Low	High
	(Likelihood of Occurrence)	

Operational Security, Resilience  
& Sustainability

# Operational Security, Simulation Resilience & Sustainability

High		
To		
Low		
(Potential impact)		
	<b>Moderate risk; medium priority</b>	<b>Critical risk; high priority</b>
	<b>Low risk; low priority</b>	<b>Moderate risk; medium priority</b>
	Low	High
	(Likelihood of Occurrence)	

# Risk Management for Operations Professionals

- Expand actively assessed and managed supply chain risks ( gap analyses)
- Use advanced data analysis, supply chain risk decision matrices and statistical modeling
- Hedge impact of non-controllable risk

# Learning Objectives

1. Understanding components in the trade-off among risk and efficiency
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# Thank you

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