Crisis Management for Leaders

Recognizing and Managing Novel Risks in Your Supply Chain

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Crisis Management For Leaders Program Schedule

- COVID-19 as a Novel Event and Risk Management Framework
- Coping with Sudden Changes in Cash Needs and Availability
- Structuring the Organizational Response
- **Recognizing and Managing Novel Risks in Your Supply Chain**
- Case Discussion: Chilean Mining Rescue, and Summary

Faculty Group

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Previously, in Crisis Management for Leaders, We Learned…

I. Establish a Critical Incident Management Team and Process

II. Cash is King. Gather, Protect and Preserve.

III. Assemble the Right People

- People who know the firm, its customers, its suppliers, its operations …
- People who have expertise about the context of the crisis
- People who understand and represent the firm's key priorities, values, and constituencies

IV. Engage in Iterative, Agile Problem-Solving

Recognizing and Managing Novel Risks in Your Supply Chain

Traditional supply chain management: High likelihood, low impact events, such as defects or delayed delivery of purchased items

Today's Topic: Supply chain management after low likelihood, high impact events

We will illustrate by working through several mini case studies

Supply Chain Risks and Disruptions

March 17, 2000: a fire caused by a lightning bolt erupted at a Philips semiconductor fabrication plant ("fab") in Albuquerque, New Mexico.

- Fire Chief: "It was minor. All we did was walk in and check it out."
- No one was hurt. Damage seemed superficial. News programs and even local newspapers in Albuquerque did not cover the fire.
- Current work-in-process inventory was destroyed.
- Delay was communicated to the plant's 30+ customers. "We will be back operating in a week."

Notify Your Key Customers

- Philips called the purchasing manager at Ericsson on March 20th, “one technician talking to another.”
- “It was a normal supply chain disruption. We have a two-week supply of inventory so the one-week shutdown will not interfere with our production.”
- Purchasing manager returned to work

Nokia Was Another of the Plant's Customers

- March 20th: Philips called Tapio Markki, Nokia's Chief component-purchasing manager to explain the circumstances and the expected 1-week delay.
- Markki not overly concerned – Nokia's operations, like Ericsson's would not be affected by a one week delay.
- But Markki still communicated the news to others, including Perrti Korhonen, Senior Vice President of Operations, Logistics, and Sourcing for Nokia Mobile Phones and Nokia's top troubleshooter. "We encourage bad news to travel fast. We don't want to hide problems."
- Korhonnen placed the affected parts on a "special watch" list. Five types of chips from the Albuquerque plant would receive more scrutiny. Nokia offered to send engineers to Philips – but the help was declined.

Two Weeks Later

- Philips realized it would take weeks to restart production and months to catch up on the production schedule.
- Nokia realized this could be serious – more than 5% of the company's annual production might be disrupted.
- Korhonen and Markki assembled a team of 30 – supply chain managers, chip designers, and senior executives. The team redesigned chips on the fly, sped up a project to boost production, and flexed the company's muscle to squeeze more out of other suppliers in a hurry. Alternative sources were identified for 3 of the 5 chips.
- For the two other chips, Philips was the only supplier. Korhonen called Chairman and CEO Ollila, diverted his plane, and joined him at Philip's HQ in Eindhoven to meet with Philips' CEO. After the meeting, the two CEOs announced, "Philips and Nokia would operate as one company regarding those components."
- Production of the two chips was re-routed from Philips plants in Eindhoven and Shanghai to Nokia.
- Nokia's production was largely unaffected. "At Nokia, the main cost has been frayed nerves on the crisis team."

What Happened At Ericsson?

- By the time it realized the gravity of the situation, Ericsson couldn't get the components it needed anywhere in the world.
- "We did not have a plan B."
- The fire in the Albuquerque plant took 9 months to resolve. During the summer, demand for cell phones surged!
- Ericsson lost $400 Million in revenue due to the shortage that ensued from this fire.
- The following year, Ericsson announced plans to retreat from the cell phone market.

“Chief Worry Officer?”

- *“He communicated the news to others, including Perrti Korhonen (“intense 39-year-old Finn who runs marathons and plays rock guitar in his spare time”), Nokia’s top troubleshooter.”*

Chief Worry Officer

- Poll: Who would Tapio Markki turn to in your organization if he got a call from the Philips plant manager?
  - No one
  - CEO
  - COO
  - Chief Risk Officer
  - Head of Supply Chain
  - Chief Quality Officer
  - A junior person in Operations

- How should organizations set up the CWO for success?
  - Chat your response
  - Raise your hand if you want to speak.

Supply Chain Risks and Disruptions (2)

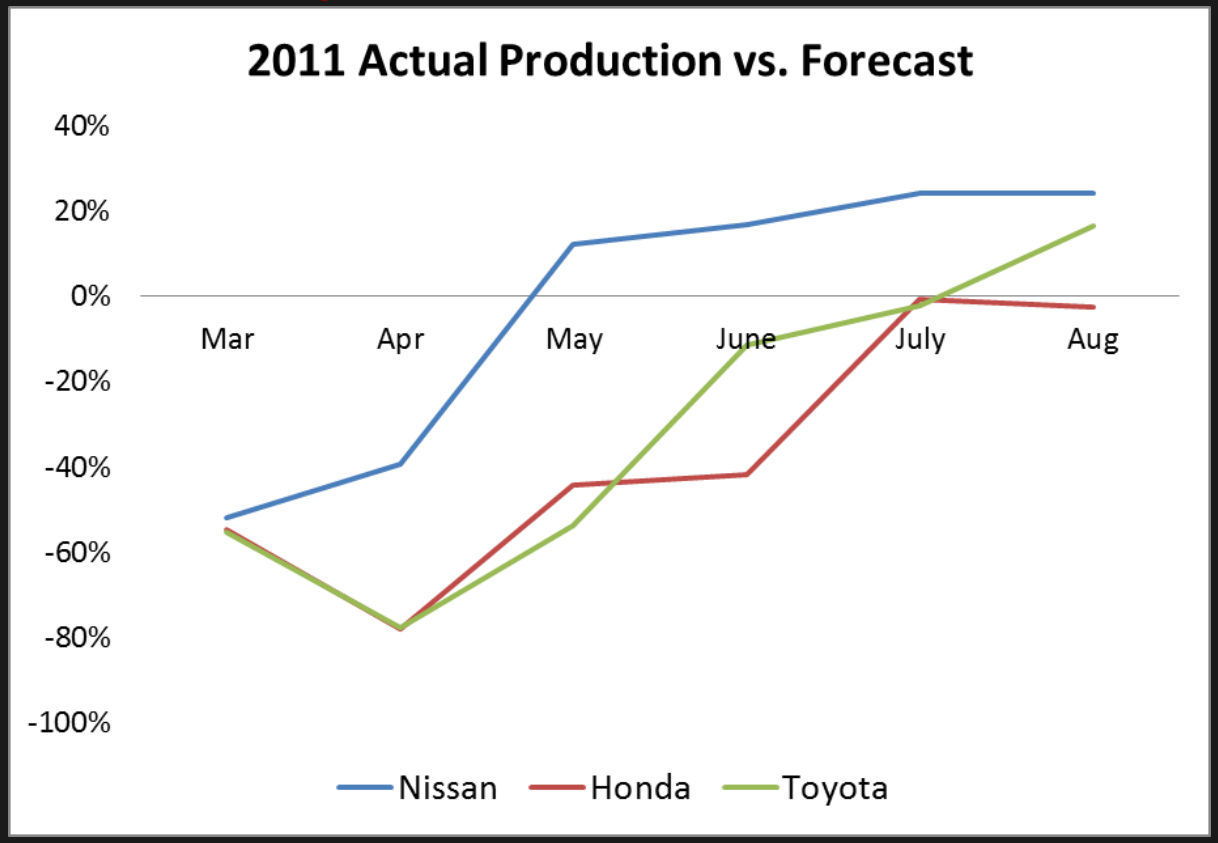
- ✓ On March 11, 2011 a 9.0-magnitude earthquake struck off the coast of Japan
  - Among the 5 most powerful earthquakes on record
  - Tsunami waves in excess of 40 m high traveled up to 10 km inland
  - Level 7 meltdown at 3 nuclear reactors at Fukushima Dai-ichi
- ✓ Massive impact
  - Over 25,000 people dead, missing or injured
  - 125,000 buildings damaged
  - Economic damage estimates in excess of $200 Billion

**Source: Case is based on publicly available information and interviews with executives at Japanese automotive manufacturers*

Impact on Japanese Automotive Factories

Company	Damage status
Nissan Motor (most affected)	• Fires broke out at Tochigi Factory and a foundry in Iwaki • Damage to the Tochigi Factory, Iwaki Factory (engines), Yokohama Factory (engines, etc.), Oppama Factory and Zama Works (lithium-ion batteries, etc.) • It will take some time before the Iwaki Factory is repaired
Toyota Motor	• Partially damaged facilities at the Iwate Factory (subsidiary Kanto Auto Works), Miyagi Factory(subsidiary Central Motor), and Tohoku Factory (parts)
Honda Motor	• Some damage in to facilities in Tochigi Prefecture
Mazda Motor	• No major direct impact
Suzuki Motor	• No major direct impact

The Varying Pace of Recovery



Taking Market Share:

For all of 2011, Nissan production was up 9.3% while all auto manufacturing was down 9.3%.

Nissan's Recovery

- Nissan recovered well
  - Production across all auto manufacturers in Japan declined 24.3% in the six months ended August 2011 compared to 2011 forecast
  - Nissan production in Japan declined 3.8% in the six months ended August 2011 compared to 2011 forecast
  - For all of 2011, Nissan production was up 9.3% while all auto manufacturers was down 9.3%
  - "*Nissan has shown the fastest recovery among the Japanese automakers and was the least affected by the earthquake. In May 2011, Nissan's domestic vehicle production was about the same as it was in May 2010.*"

- Standard & Poor's, December 31, 2011

Nissan's Response Widely Viewed As Superior

- *"While other Japanese automakers have yet to fully recover from the 11 March earthquake, **Nissan stands out**…With its high-level management and crisis management capabilities, Nissan turned adversity into an advantageous opportunity..."*

  Credit Suisse, November 3, 2011

- *"The speed of **production recovery at Nissan** after March's earthquake was remarkable."*

  Mitsubishi UFJ Morgan Stanley Securities, August 18, 2011

Nissan's Response to the Disaster

- Immediately after the disaster, Nissan's Global Disaster Control Headquarters, headed up by the chief operating officer, was convened to evaluate the impact on operations and to oversee the restoration activities. A Recovery Committee was established to coordinate the global recovery actions, in particular the work of optimizing the entire supply chain.

- "We launched the Global Disaster Control Headquarters just 15 minutes after the earthquake occurred. The team immediately gathered and assessed damage while overseeing restoration efforts at various facilities."

- Each region was asked to send two staff members to Japan to gather their own information and to help solve problems holistically.

Allocating Capacity

- The sales, marketing, and the regional supply chain management functions were brought together to identify how to globally allocate supplies to focus on highest margin goods.

- For example the supply of integrated Global Positioning System (GPS) units was constrained by the disaster. Nissan identified which car models required integrated GPS to meet customer demands, and allocated resources accordingly. Low-end models did not receive the allocation of available GPS since they did not have commensurately high margins, and customers were willing to purchase those models without an integrated GPS. This process was completed within two weeks of the earthquake and continually updated as the supply situation became clearer.

Reacting Promptly

What did Nokia/Nissan do that your company should have done? What has worked especially well for your business during this crisis?

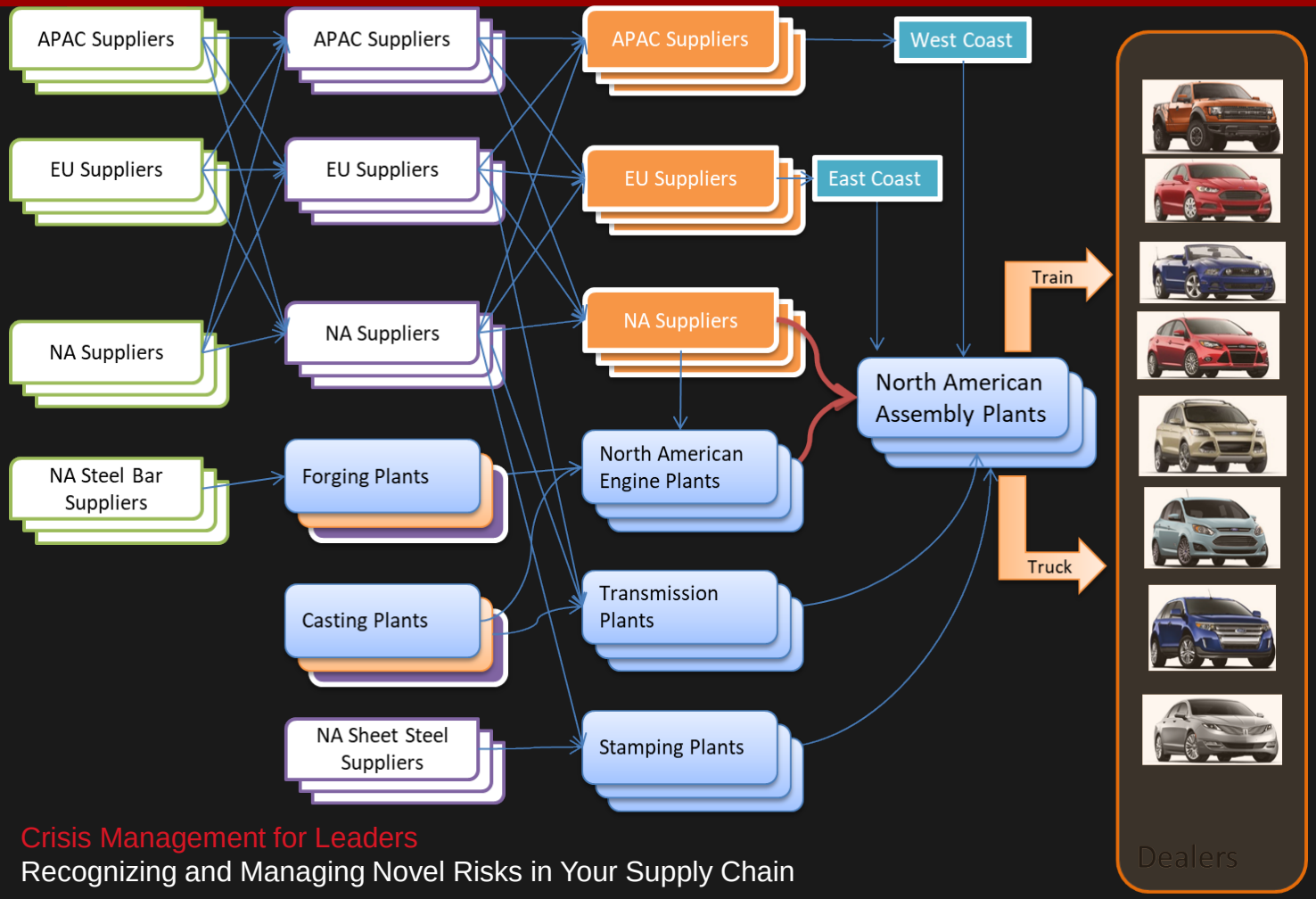
Please chat your response
Raise your hand if you are willing to speak.

Supply Chain Risks and Disruptions (continued)

"Identifying Risks and Mitigating Disruptions in The Automotive Supply Chain"

- William Schmidt, David Simchi-Levi, Yehua Wei, Peter Yun Zhang
- Keith Combs, Yao Ge, Oleg Gusikhin, Michael Sanders, Don Zhang

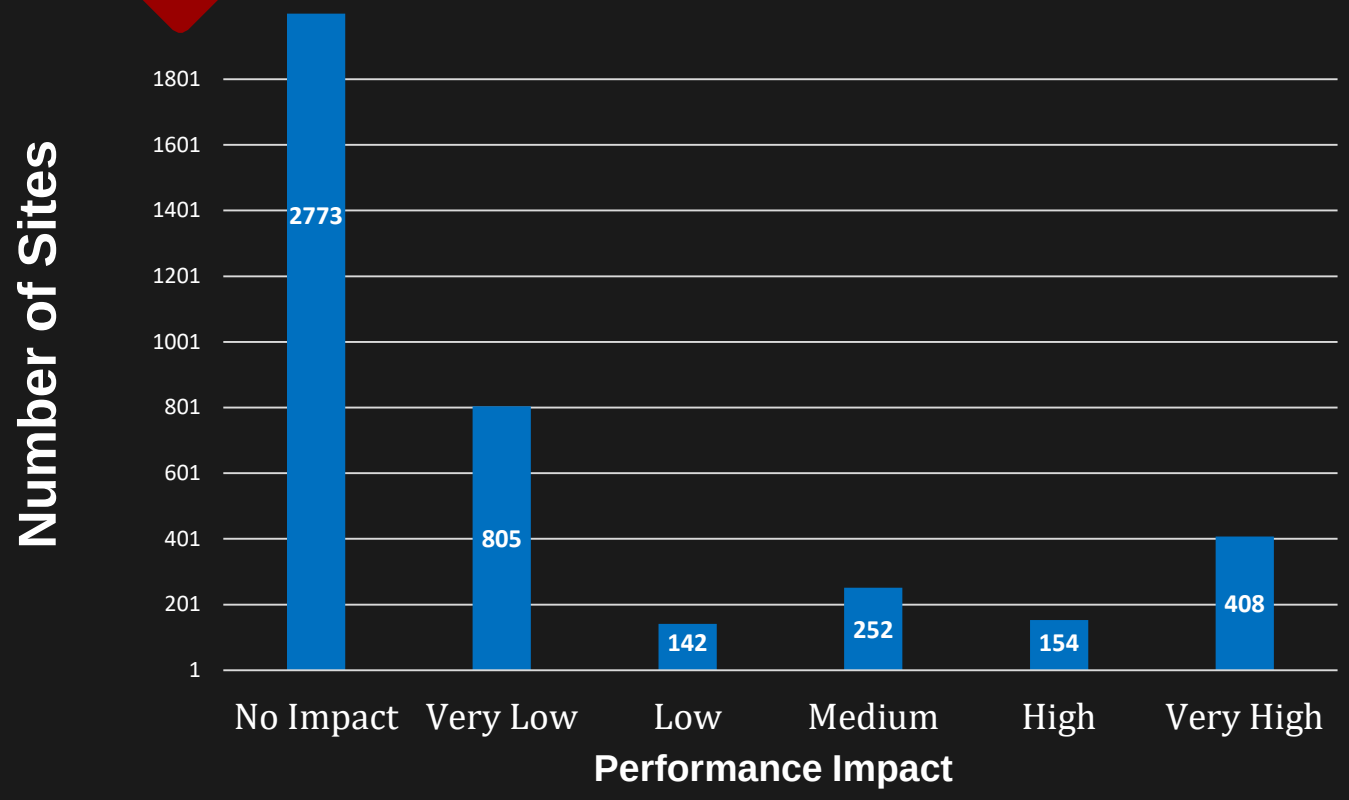
Ford's Supply Chain: The Challenge



Ford's Supply Chain: a Large Multi-Tier Network

- Complex bill of materials and supply chain structure
- Over 50 manufacturing plants
- 10 tiers of suppliers
- 1,400 tier 1 supplier companies, with 4,400 manufacturing sites in over 60 countries
- 55,000 different parts
- 6 million vehicles produced annually

Performance Impact of Different Supplier's Sites



2,773 sites with No Impact

Performance Impact and Total Spent at Supplier Site

- In March 2012, the auto industry was rocked by a shortage of a specialty resin called nylon12, used in the manufacture of fuel tanks, brake components, and seat fabrics.
- The key supplier, Evonik, had experienced a devastating explosion in its plant in Germany. It took Evonik six months to restart production.

Evonik's Key Customers

	Source
Akebia Therapeutics, Inc. (NasdaqGM:AKBA)	Biotechnology
Azelis Holding S.A.	Trading Companies and Distributors
BioAmber Inc. (NYSE:BIOA)	Commodity Chemicals
Brenntag AG (XTRA:BNR)	Trading Companies and Distributors
Evonik Industries AG (DB:EVK)	Specialty Chemicals
Evonik Industries AG (DB:EVK)	Specialty Chemicals
Evonik Industries AG (DB:EVK)	Specialty Chemicals
Evonik Industries AG (DB:EVK)	Specialty Chemicals
Evonik Resource Efficiency GmbH	
Flexion Therapeutics, Inc. (NasdaqGM:FLXN)	Biotechnology
Henkel AG & Co. KGaA (DB:HEN3)	Household Products
Indian Oil Corporation Limited (BSE:530965)	Oil and Gas Refining and Marketing
Insilco Limited (BSE:500211)	Commodity Chemicals
Insilco Limited (BSE:500211)	Commodity Chemicals
Kyokuto Boeki Kaisha, Ltd. (TSE:8093)	Trading Companies and Distributors
Lanxess AG (XTRA:LXS)	Diversified Chemicals
NuPathe, Inc.	Pharmaceuticals
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Orion Engineered Carbons SA (NYSE:OEC)	Commodity Chemicals
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Pivot Pharmaceuticals Inc. (OTCPK:PVOT.F)	Pharmaceuticals
Polypore International, LP	Electrical Components and Equipment
Rohm and Haas Texas Incorporated	
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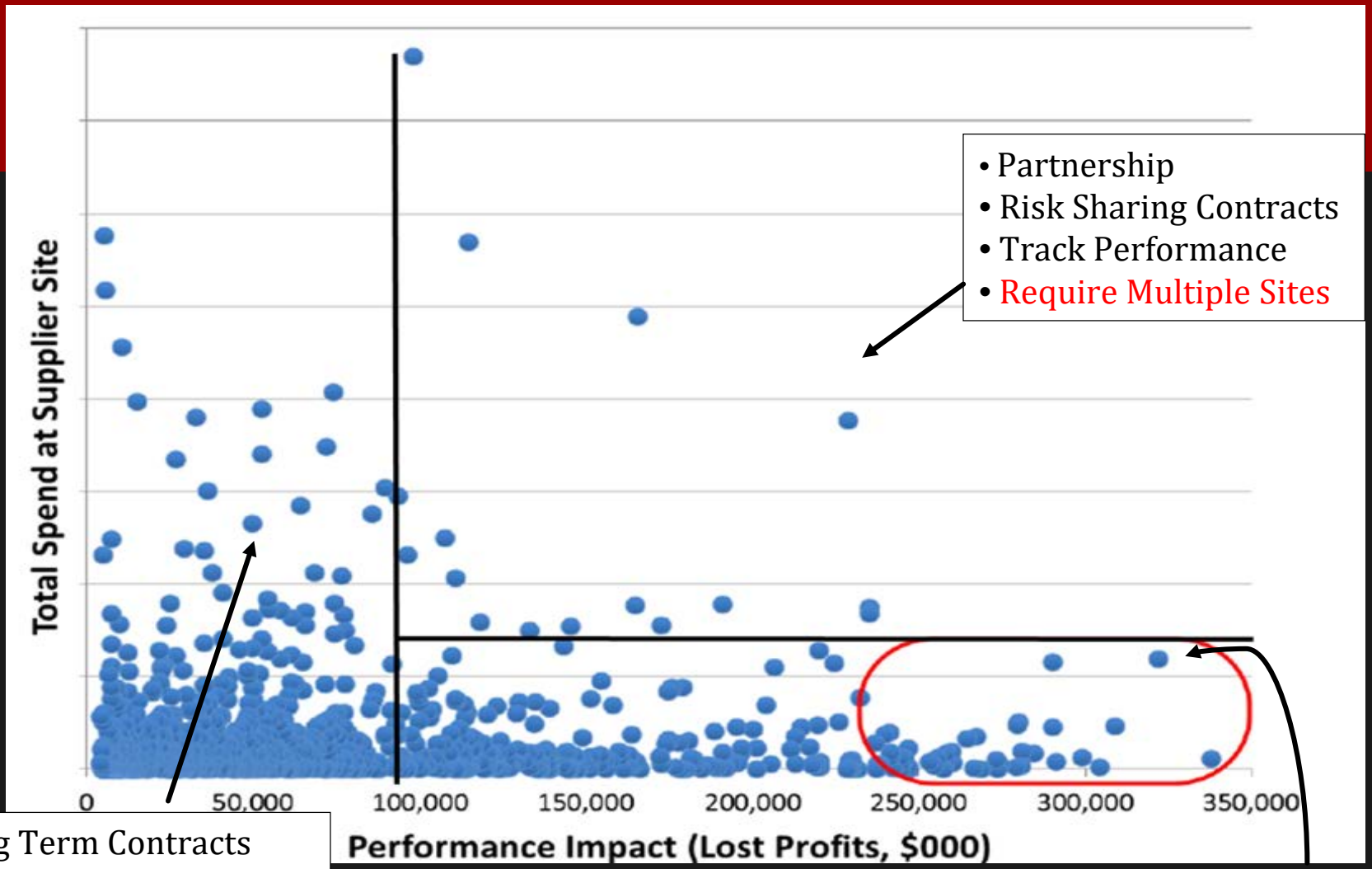
Soilbuild Business Space REIT (SGX:SV3U)	Diversified REITs
Synthetics Biologics, Inc. (AMEX:SYN)	Biotechnology
Univar Inc. (NYSE:UNVR)	Trading Companies and Distributors
Voxeljet AG (NYSE:VJET)	Industrial Machinery
Wonik Cube Corp. (KOSDAQ:A014190)	Trading Companies and Distributors

Supplier Sites Segmentation



- Partnership
- Risk Sharing Contracts
- Track Performance
- Require Multiple Sites

- Long Term Contracts
- Track Inventory

- Inventory
- Dual Sourcing
- New Product Design

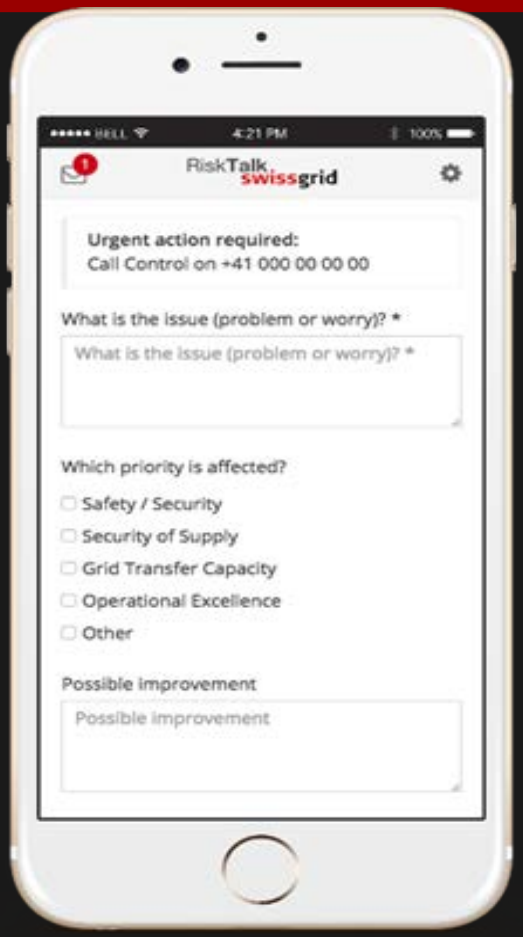
Swissgrid Uses Several Processes to Identify and Manage Emerging (Novel) Risks

- Risk Officer Becomes Aware of a non-urgent Emerging (Novel) Risk
  - Potential cyber-attack
  - Low annual snowfall leading to much lower water level on the Rhine River
  - Bankruptcy of a major energy producer
  - New EU regulation affecting energy distribution or safety
- Calls an Extraordinary Risk Management Workshop
  - Business Unit managers, risk officers, and internal or external Subject Matter Expert
  - Assess the risk and decide whether to bring to an Executive Risk Workshop

Employees Have an App, Risktalk, On Their Smartphones to Communicate Potential Risks

- Create a risk culture among employees
- Requires a real-time triage team to monitor and take action on RiskTalk messages.

"See something, text something"



https://risktalk.ch/

Swissgrid's "All Seeing Eye" system

- LVZ – external multi-entity system on stuff happening around Switzerland;
  - Swissgrid, Swiss Army, National Police Force, Mountain Rescue, …
  - monitored by member of Swissgrid triage team

Audience Q&A:

- Do you have systems that routinely scan and monitor external events for review, perhaps by Chief Worry Officer, for their implications to your company?

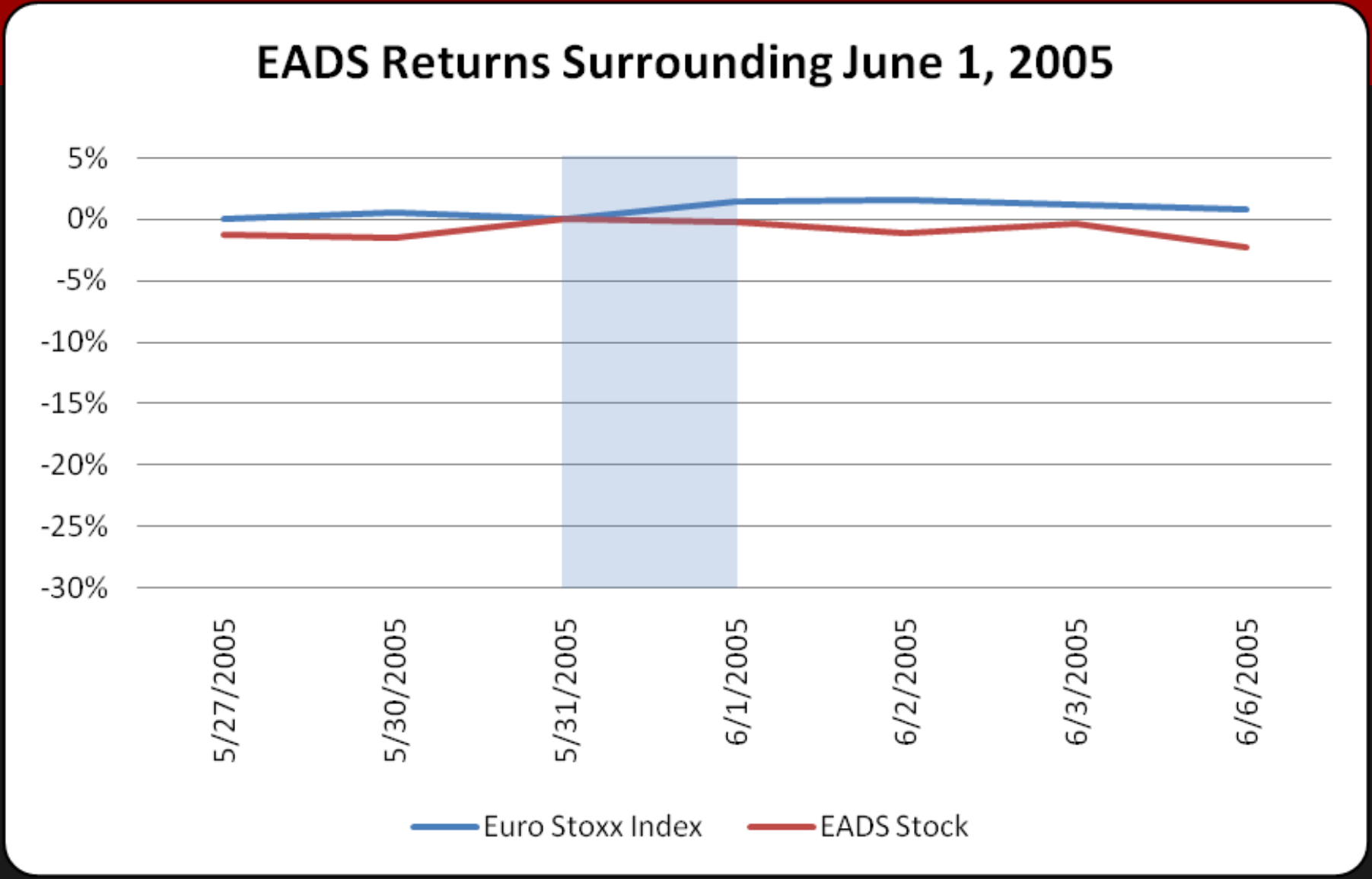
- What tools and processes (like RiskTalk)do you have for employees to send information into the organization about worries, violations, concerns they see or have?
  - Not a whistle blower program
  - Use employees for surveillance and alerts about unusual conditions developing

Airbus

The First Delay in June 2005

Year	Original Target	Updated Target (June 2005)	
2006	10	2	
2007	35	25	
2008	Not available	37	
2009	Not available	45	

Market Response To The First Delay Was Relatively Muted…



The Second Delay in June 2006

Year	Original Target	Updated Target (June 2005)	Updated Target (June 2006)
2006	10	2	1
2007	35	25	9
2008	Not available	37	28–32
2009	Not available	45	40

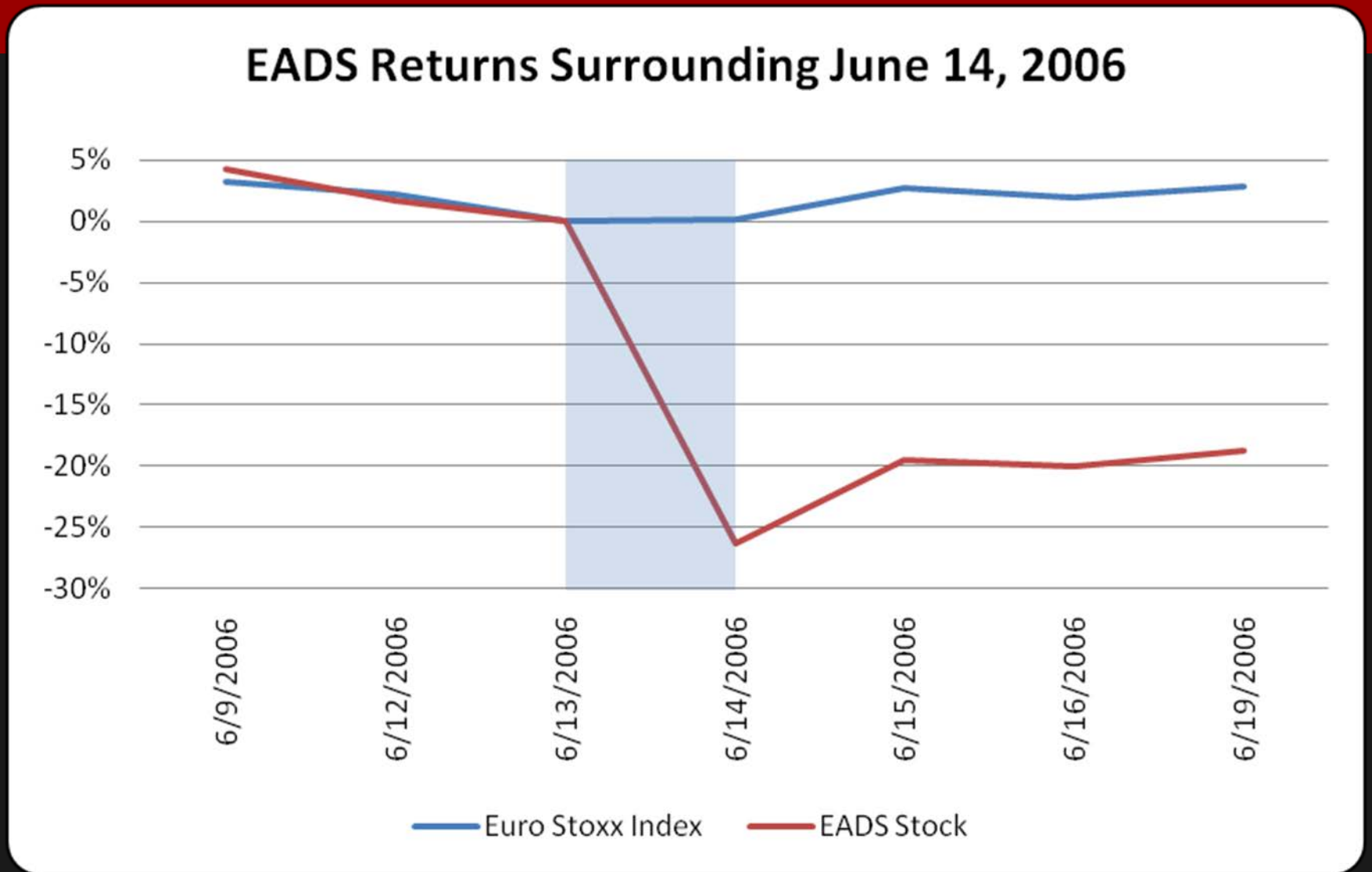
June 2006 delay: €500M per year for 2007-2011. Roughly € 2 Billion financial impact.

The Stock Market Reaction…

- ✓ Shares Closed at 25.42 on 13 June 2006 and 18.73 on 14 June 2006, a Drop of Over 26% (DJ EURO STOXX Was Essentially Flat for the Day)
- ✓ This Equated to a Destruction of Over €5.3 Billion in Market Capitalization

	Airbus			Airbus vs.	Boeing vs.
	Close	Change	ΔMkt Cap (M)	DJ Euro STOXX	S&P500
6/8/2006	25.71	-3.89%	-832 €	-1.19%	-0.47%
6/9/2006	26.55	3.27%	672 €	1.75%	-0.40%
6/12/2006	25.85	-2.64%	-560 €	-1.60%	-1.98%
6/13/2006	25.42	-1.66%	-344 €	0.54%	-0.13%
6/14/2006	18.73	-26.32%	-5,353 €	-26.48%	6.02%
6/15/2006	20	6.78%	1,016 €	4.27%	1.29%
6/16/2006	19.9	-0.50%	-80 €	0.20%	1.23%
6/19/2006	20.15	1.26%	200 €	0.44%	0.00%

Market Response to the Second Delay Was Much Greater…



Stock Market Responded Very Differently

June 2005

- EADS stock held value, subsequently improved.

June 2006

- Delay in A 380 had devastating stock. Loss in market capitalization > € 5 Billion while financial announcement was for only € 2 Billion.

•**Under what circumstances, is the impact amplified or mitigated?**

Personal Feeling

The “Covid Crisis” will lead to a “Confidence Crisis” in many Supply Chains

The Role of Trust in the Supply Chain

Why is it hard to preserve trust during a crisis (when it might be most important to do so)?

Please chat your responses.

Takeaways

- Supply chains and operations have become more complex and sometimes, tightly coupled.
  - Highly important to apply old lessons like “let bad news travel fast” even more diligently.
  - Anticipate “shifting bottlenecks” during and after crisis

- Many operations are susceptible to low-likelihood, high consequence disruptions
  - In the last few decades, we have become better at dealing with high-likelihood, low consequence events.
  - A “Chief Worry Officer” might be worth considering for low-likelihood, high consequence events (Andy Grove, “only the paranoid survive”).
  - Learn where your supply chain is most vulnerable. The answer may surprise you.

Engage in Iterative, Agile Problem-Solving

(0) Establish goals, priorities, and values	Moral reasoning
(1) Understand the situation	Description
(2) Develop options	Creative
(3) Predict outcomes for each option	Analytical
(4) Choose the best course of action	Executive
(5) Execute	Administrative

Please Keep Yourself And Others Safe

You are a resource for your organization …
and for our world.

We need you in this fight.

Pace yourself …
… we still have a long way to go.

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