DISRUPT

AVIATION

Part 1: Unpredictable and Malicious Threats

Deloitte. *on...*

DISRUPTION

MANAGING STRATEGIC RISK IN AVIATION

Part 1: Unpredictable and Malicious Threats

Not all Risks are Equal

All airlines face a distinct set of business risks and challenges, and a marketplace that continues to be reshaped by new entrants, state-owned carriers, evolving economic conditions and shifting consumer preferences.

That's enough to keep most leaders busy without considering the disruption and the potential consequences of hard-to-identify, high-impact threats that can erode strategic value. Or present new and compelling opportunities. Once airline executives understand the true nature of these risks, they can more confidently evaluate the organization's capacity to respond to them.

Not all Risks are Equal

Whether executives are concerned about potential hacking and security breaches, insider actions from bad actors bent on wreaking havoc, or supply-chain or third-party disruptions, one fact remains clear: aviation's risk wheel is turning, and the way airlines manage and mitigate risk needs to evolve, too.

Airline Industry Key Financials[1]	
$18.7B	Total Profits
$2.51%	Profit Margin
$5.65	Profit per Passenger

Historically, the aviation industry has done a phenomenal job of managing operational risk by keeping a sharp focus on safety and security. Traveler confidence in air travel remains high. But the risk postures facing the airline industry today have changed rapidly, and in several dimensions.

What's more, the emerging nature, complexity, and sources of risk demonstrate that not all risks are created equal.

That's why traditional, broad-based risk management strategies must be reconsidered to devise a more strategic perspective that is industry-centric, cost-effective, and targeted. Done correctly, a well-articulated risk management approach, based on return on investment and supported by a proactive infrastructure, can be a winning differentiator for airlines. To be effective, this modern approach to risk management should be a high priority on the C-suite agenda and be driven top-down.

This report—the first in a series from Deloitte Advisory that specifically highlights aviation risk—begins the dialogue by discussing unpredictable and malicious threats facing airlines today. Future reports in the series will explore the disruptive effect of changing global demographics and evolving business models, the impact of changing airline regulations, and how war gaming can be leveraged to better prepare for uncertainty.

High-Impact Threats

Unpredictable and Malicious Acts

Running an airline requires many human and technical touch points, leaving airlines especially vulnerable to bad actors with intent to do harm. These bad actors can embed themselves in the normal flow of business operations, both locally or across vast integrated systems and processes.

Let's take a look at three areas of unpredictable and malicious threats, all of which can potentially inflict damage on the airline industry:

1. Cyber incidents and data breaches
2. Insider threats and the risk from within
3. Supply chain disruption (third-party and vendor threats)

Mitigating these threats requires a significant investment in risk sensing and control technology, processes, and protocols. But when constrained by limited resources, how does an executive team choose how much to invest in each area? And how can executives better predict and address threat scenarios?

How vulnerable are you to cyber theft and data breaches?

The airline industry is overflowing with data and often-interlocking data sets, including passenger data—which extends from booking to handling baggage to soliciting post-flight feedback—and operational data—which ranges from aircraft sensors to weather agencies to GPS systems. New digital aircraft (also called e-enabled aircraft), which are now rolling off the production lines, allow carriers to leverage connected devices to increase efficiency along

the supply chain, from optimizing flight performance to managing drink orders. Not only do aircraft engines now allow for remote monitoring and use-based billing models, the biometrics of every passenger soon may be collected, stored, ranked, analyzed, and repackaged to increase profitability. This data can help form the backbone of a company's growth, efficiency, and business performance.

Yet with lots of data comes lots of risk. From reservations to maintenance to flight management, commercial aviation depends on secure information technology systems. Recent events demand that security professionals treat the possibility of hacking into a live flight management system not as a question of "if," but "when." As the nature, scope and timing of such events become less predictable, passengers' concerns over privacy and safety likely will increase.

Therefore, when evaluating future technology investments, airline industry security professionals and executives should consider all forms of cyber security threats that inevitably come with such innovation. From this vantage point, they will be better prepared to incorporate risk mitigation strategies early in the planning and design cycle.

"It won't happen here"

These are four of the most dangerous words that management can utter. Insider threats by employees, contractors, or vendors can result in potentially serious harm to an organization's staff, customers, information, material, or facilities. Airline insiders may engage in a range of acts that include workplace violence, exfiltration of information, physical security compromise, sabotage, terrorism, and physical property theft—all of which can challenge an airline's core mission and viability.

Identifying anomalies where insider threats may emerge requires a comprehensive data-driven, real-time monitoring capability. Such monitoring needs to look at the virtual and non-virtual business space, as well as the critical roles employees play across an airline's operations. When used proactively and configured properly, sense and control

High-Impact Threats

mechanisms can identify potential insider threats early and interrupt what might develop into a malicious act.

Digital data–including video and access-device data–can be used to detect some insider threat activities, as well as help identify which employees may be at risk of committing or abetting an insider attack. However, data analysis and detection cannot do it all. Sensible detection solutions combine data collection and analysis with a significant level of human attention. This analysis and associated response must be better coordinated across increasingly complex operations and systems.

To effectively manage potential threats triggered by malevolent insiders, airlines should prioritize the ones that are likely to have the greatest impact on their business strategy or competitive advantage without preconceived notions of their likelihood of occurrence.

Equal-opportunity malevolence

Insiders are not the only potential bad actors. Outsourcing key services and personnel requires that airline executives lessen the potential for insider threats through a comprehensive and holistic threat program.

Supply-related threats will remain front-and-center as long as airlines procure critical products and services from third-party vendors. While third-party baggage handling, check-in, catering, cleaning, maintenance, fueling, and regional flying services offer operational efficiencies that lower costs, outsourcing can increase the risk of supply-chain disruption. This makes it imperative that third-party risk management and due diligence activities receive the appropriate level of management attention.

Traditional approaches to managing third-party risks—typically spot audits and routine inspections—may no longer be adequate. Augmenting these activities with data-centric continuous monitoring of key supply-chain activities can help stave off potential disruptions. For example, the use of forward-looking, event-tree analysis techniques can help identify breakdowns in existing control measures and improve the airlines' and vendors' collaborative oversight.

Business is soaring. Why worry now?

Following years of sustained downward pressure on margins, the US airline industry has finally sloughed off the effects of the Great Recession, which can be seen in rebounding revenue, higher load factors, expanding disposable income, loosening business travel budgets, and lower oil prices. Between 2009 and 2014, US domestic airline revenue increased by a 3.6 percent compound annual growth rate (CAGR), while jet fuel prices are trading at their lowest level in nearly six years. [2]

Many believe that, at least in the near term, the industry will continue to prosper thanks to continuing economic growth in the US, consolidation, and management's focus on running more efficient operations.

So, what's the key to maintaining competitive advantage? Implementing innovative, effective, and efficient risk management techniques and strategies.

Our relatively stable business climate presents a good time to invest and to consider intelligent risk taking for future growth. This is the time for forward-thinking airlines to create a competitive advantage by implementing thoughtful strategies to mitigate known and unknown future risks.

High-Impact Threats

View risk through a lens — not a rear-view mirror

The aviation industry's future continues to be reshaped by new competitors such as ultra-low-cost passenger carriers, and state-owned carriers coupled with evolving industry structures and evolving economic conditions. Customer preferences are shifting, demographics are changing, and the industry is facing technology-driven supply-chain disruption.

In the past, organizations have relied on efforts to combine disparate risk programs into an "enterprise" view of risk with varying degrees of success. Risk management organizations have a tendency to look in the rear-view mirror—often failing to consider disruption and the potential consequences of hard-to-identify risks and emerging threats that can either erode strategic value or, conversely, present new revenue opportunities.

Given the significant costs invested by airlines to manage risk (e.g., life cycle management and insurance), a more targeted and forward-looking approach toward identifying strategic risk drivers that consider the unique nature of the industry should be considered, developed, and deployed. An approach that not only requires sensing mechanisms that prepare for surprises, but an integrated program that gives executive leadership a broader view of latent risks that may have been buried or stored in silos within the organization.

The thin ice of disruptive environments

With cyber threats and insider and third-party malevolence posing greater risks, executive teams should advocate for more proactive assessment of and response to unpredictable and malicious threats. Traditional risk management approaches rarely focus on unknown and emerging events that do not conform to existing assumptions and safeguards (what one might call simply surprises or black swan events). The potential consequences of "unknown unknowns" are major disruptions in business operations and future growth.

Airlines can prepare for disruptive events by moving beyond traditional probability-based risk management approaches and toward innovative and integrated models. These models rely heavily on forward-looking analyses of threat intelligence, as well as simulation of various plausible events that test the organization's ability to detect, mitigate, quickly recover, and learn from such events.

Strategic Risk Capability – Getting It Right

So far in this report, we have highlighted the challenge of detecting cyber intrusions, spotting bad actors and uncovering supplier threats. These are three highly vivid examples of a larger class of less visible potential surprises that executive leadership needs to be able to scan and prepare for in order to improve the resiliency of the business.

As airlines seek to modernize their risk management programs, they should address the fundamental risks that threaten the long-term viability of the enterprise by embracing the tenets of strategic risk capability. This involves understanding, in an integrated, programmatic way, the interconnectedness or interdependency of a risk, the speed of onset of the risk event, the level of preparedness to detect and manage the risk, and building capabilities to navigate these emerging malicious threats with greater confidence. Quantifying and simulating various risk scenarios add important dimensions to strategic risk capability.

Even if the majority of established or emerging airlines are doing everything right by traditional standards, strategic risks can still surprise. The challenge facing many airlines now is how to anticipate, adapt, make decisions, and change course in the face of these ever-evolving threats.

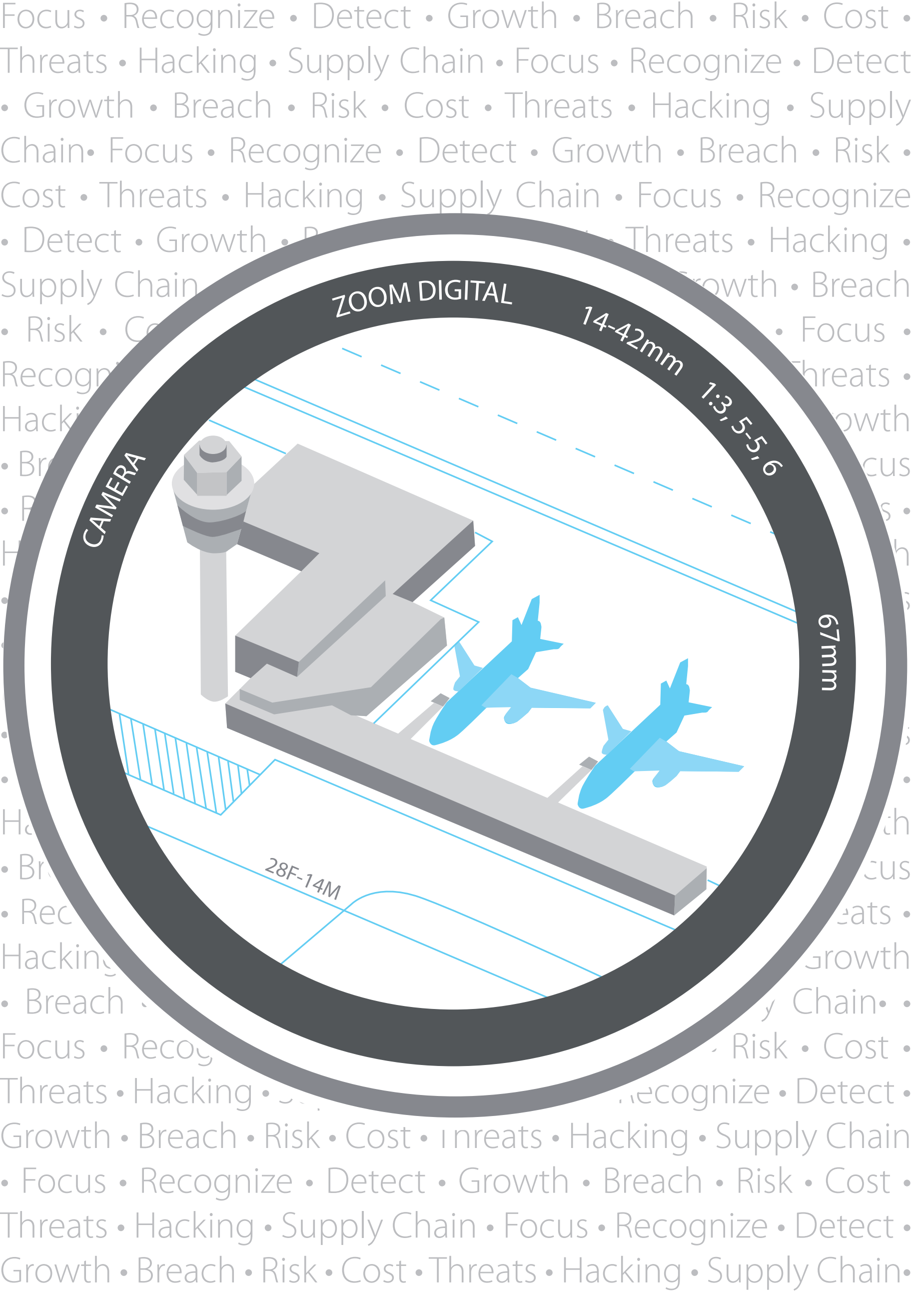
But there is an upside, too. Spotted early and handled well, strategic risks can point the way to game-changing moves that reorder the playing field.

Strategic Risk Capability – Getting It Right

When is strategic risk capability most effective?

The most successful airlines will recognize that unpredictable events will inevitably reshape their businesses. They will understand the value of implementing strategic risk management, applying fresh thinking, and leveraging expert partners at the appropriate organizational level. Finally, their strategic risk programs will:

- Align strategic objectives, intent, and risk measures
- Gain an enterprise view that resonates across the organization
- Implement governance and oversight that link into the board
- Understand that risks are internal and external—and that blind spots and biases can hinder insights
- Make use of simulation techniques that look for disruptions from unexpected places
- Maintain active and ongoing data gathering, analytics, and visualization
- "Connect the dots" that lead to better decision making



Final Thoughts: Benefits of Adopting Strategic Risk Capability in Aviation

Not all risks are created equal, and not all threats have the same capacity to debilitate a business. By adopting strategic risk capability, the aviation industry can focus the risk lens on a broader range of new and emerging threats and opportunities. Strategic risk capability can provide better early sensing and response mechanisms that allow airlines to get in front of malicious and unexpected threats, specifically in the areas of hacking and security breaches, insider actions, and supply chain disruptions. Furthermore, through simulations that test the organization's ability to detect, mitigate, quickly recover, and learn from risk events, strategic risk capability can reduce the realization of threats that could otherwise bring down the enterprise. Ultimately, the goal of strategic risk capability is to protect and enhance the airline's reputation, brand, and future growth potential.

Interested? Join the conversation.

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[1] Zack's Investment Research, "Airline Industry Stock Outlook 2014", http://wwwzacks.com/commentary/31988/airline-industry-stock-outlook-april 2014.

[2] U.S. Energy Information Administration, Independent Statistics & Analysis. Jet fuel prices refer to U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price FOB (Dollars per Gallon). http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EER_EPJK_PF4_RGC_DPG&f=M Graper, Prema Mirwani (US - Arlington) <pgraper@deloitte.com>

ACKNOWLEDGEMENTS

The following individuals have contributed to this paper: Don Dixon, Prema Graper, Jonathan Holdowsky, Shane Negangard, and Elton Parker.