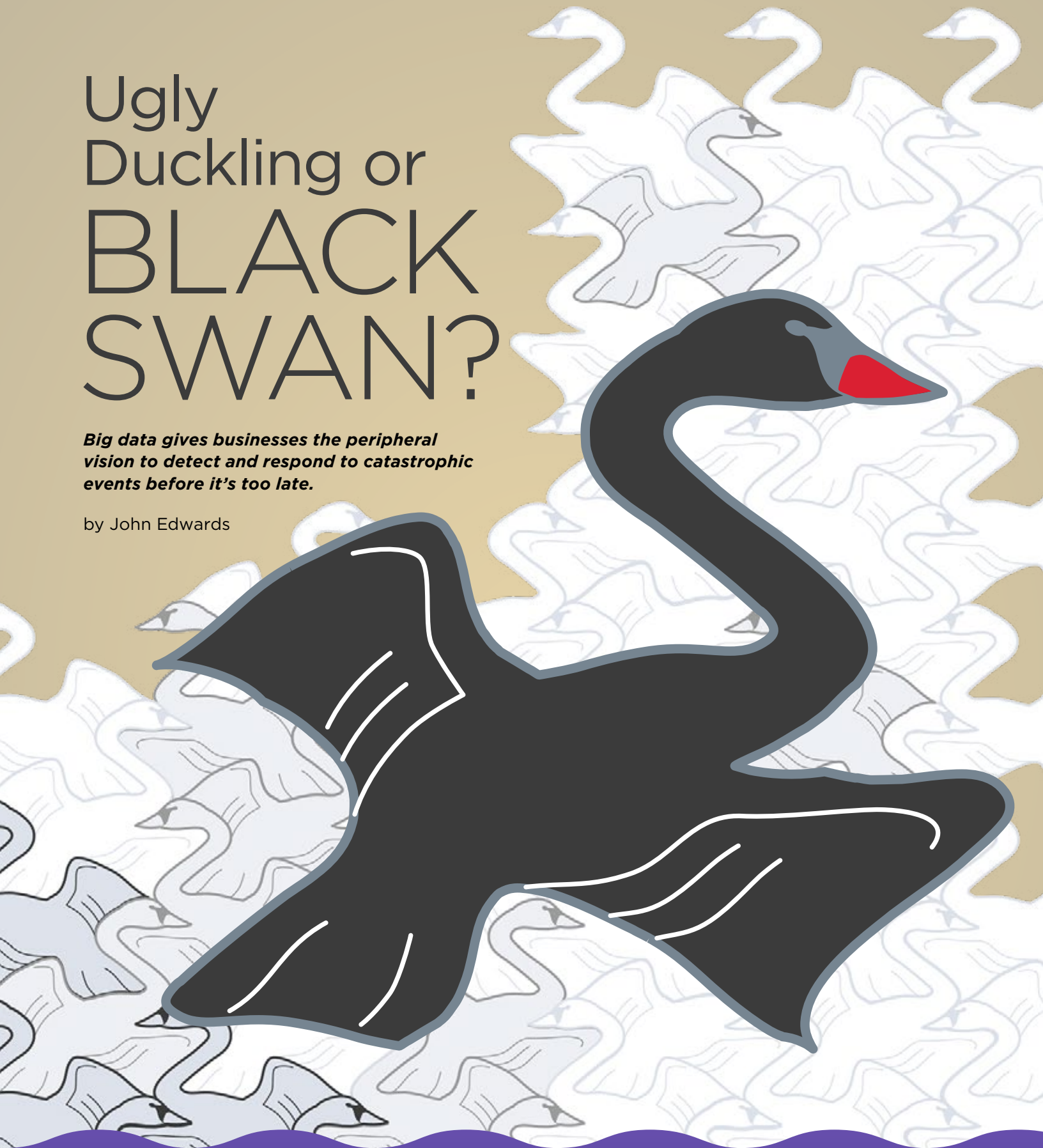
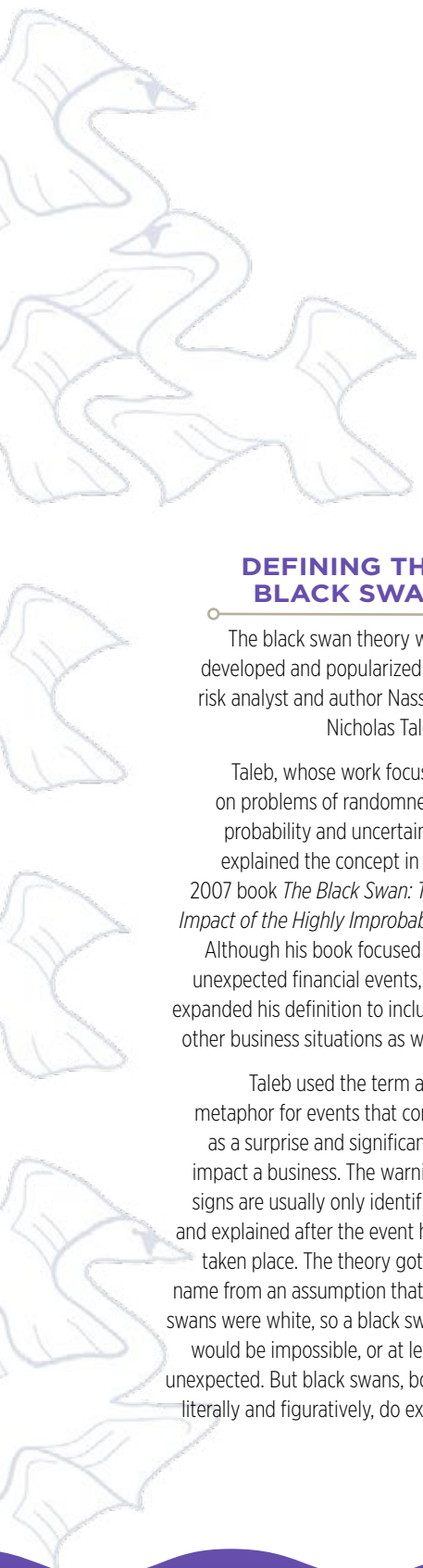


Ugly Duckling or BLACK SWAN?

Big data gives businesses the peripheral vision to detect and respond to catastrophic events before it's too late.

by John Edwards





DEFINING THE BLACK SWAN

The black swan theory was developed and popularized by risk analyst and author Nassim Nicholas Taleb.

Taleb, whose work focuses on problems of randomness, probability and uncertainty, explained the concept in his 2007 book *The Black Swan: The Impact of the Highly Improbable*.

Although his book focused on unexpected financial events, he expanded his definition to include other business situations as well.

Taleb used the term as a metaphor for events that come as a surprise and significantly impact a business. The warning signs are usually only identified and explained after the event has taken place. The theory got its name from an assumption that all swans were white, so a black swan would be impossible, or at least unexpected. But black swans, both literally and figuratively, do exist.

IN BUSINESS, A BLACK SWAN

is an extreme event that flies in—*seemingly from out of nowhere*—to disrupt normal operations. The probability of one striking in the near term is low, yet since the threat is ever-present and can have a devastating impact, the mere knowledge of its existence makes C-suite executives nervous. Be warned: sooner or later, you will experience one.

Since a black swan is difficult (some would argue impossible) to predict, few organizations think about preparing for the possibility. However, the risks of inaction are high and the costs can be enormous. When one does arrive, whole industries can be rattled and thrown into disarray. In extreme cases, companies close, suppliers or partners shut down, formerly profitable markets vanish and once-stable business models are shattered.

Kathleen S. Long, CEO of Montage Analytics, a risk assessment software and management consulting company, notes that “the black swan blindsides the organization and creates a ripple effect far beyond the organization’s boundaries to customers, suppliers, shareholders and other stakeholders.”

Global companies face a greater risk of havoc since a catastrophe, including a natural event such as a tsunami, can affect the entire supply chain as well as deliveries to customers worldwide. Even events that at first appear trivial or happen on the other side of the planet can escalate, causing unanticipated problems. In other words, if you ignore that little duckling now because you think it’s ugly but harmless, the next time you look it may very well have grown into a crisis-level black swan. >>

DETECT AND MITIGATE EVENTS WITH BIG DATA ANALYTICS

Black swans can elude traditional data analytics and standard operating procedures, which means they are usually only recognized when it's too late to head them off and after much of the damage is done. But now, big data and advanced analytics may help detect the subtle early warning signs. "If you go back to market events of a few years ago,

"Global complexity compounded by the speed of change has rendered us increasingly vulnerable to apparently random and potentially catastrophic events known as black swans."

—Kathleen S. Long, CEO of Montage Analytics

some banks did better than others ... [because] they had a much better understanding of their portfolios and better understanding of the risk," says Dilip Krishna, a director in Deloitte & Touche's governance, regulatory and risk strategies practice.

For organizations to detect an impending event, they must have the ability to interpret analytic insights that point to a potential catastrophe. Most large companies have an enterprise risk management (ERM) department to identify risks. Yet ERM departments generally focus on regulations and traditional risks without addressing out-of-the-blue events.

The knowledge, skills and capabilities needed to manage uncertainty can be challenging to find within any business, Long observes. "It's important to distinguish between 'risk' and 'uncertainty.' Risk is measurable quantitatively and lends itself to planning. Uncertainty is the domain of the black swan and cannot be calculated or planned for in the same way," she explains. "Global complexity compounded by the speed of change has rendered us increasingly vulnerable to apparently random and potentially catastrophic events known as black swans. In this fast-moving, complex world, if we don't know what we don't know, how do we prepare for an uncertain future?"

The only way to mitigate the effects of such an event is to identify organizational and system vulnerabilities and the consequences of possible threats in order to cultivate resilience, Long points out. This process depends on understanding the cultural context and the effect of human behavior within it.

"Strategies should be revisited locally ... with enterprise updates annually or as needed," she says. "We need better models that capture the role of human behavior in complex adaptive systems. At the core of every black swan event, you will find human behavior and interaction."

COUNTER THE THREAT

Preparing for a possible disruptive event needs to entail scrutinizing data as deeply and carefully as possible to spot clues that could indicate an

6 BLACK SWANS THAT SHAPED INDUSTRIES

Nobody really knows how many black swan events hit businesses each year since many of the incidents impact only a single company or just a small number of organizations. Yet other black swans are so large, important and devastating that they generate global attention. Here are some of those significant events:

2014:

A sharp drop in oil prices created severe financial pressure for North American energy companies engaged in fracking and other relatively high-priced production technologies.

2010:

A volcano eruption in Iceland forced airlines to cancel thousands of flights over several days as the ash cloud drifted over Europe.

Maybank's Journey to Risk Transformation



Because the definition of “profitable” has changed in the evolving financial regulatory environment, financial institutions need risk-adjusted views of profitability that incorporate funding, capital and other risk management obligations. Maybank, the largest commercial bank in Malaysia serving a customer base in 19 countries and earning more than \$1.5 billion annually, accomplished that task with a new credit risk data model.

Maybank started with customer information that had been cleansed in the data warehouse, which was combined with risk and financial data on a single platform. That provided account-level visibility into core credit risks and the ability to manage risk with greater financial accuracy, giving executives more insight to make data-driven decisions. More insights from big data also allowed the company to make more informed risk management decisions.



Watch this video at:
bit.ly/1FRFZ34

“We wanted to have an integrated database, an integrated platform where we can do all of our analytics work and eventually this will be expanded throughout the bank, which is including the regional offices and worldwide,” says Khor Lai Seng, executive vice president and head of Group Risk Innovations and Group Credit & Risk Management for Maybank.

With unified data and analytics, the bank was able to reduce the implementation risk when creating mapping and accounting rules between core banking systems and the general ledger. Maybank also gained greater insights into market positions and the ability to cover them. This gave the bank an unprecedented ability to measure and manage risk at any point across the organization, from firm-wide departments to the smallest business unit.

impending crisis. Even if an organization is focused on what it knows are the tasks at hand, big data provides peripheral vision to see what other events could impact the business. Krishna recommends that companies ask themselves if they have the capacity to analyze events that trigger a black swan event and if they have the flexibility to ask questions that have not been asked before. In order to get the new insights the business needs, the analysis must be ongoing and agile, he adds.

Organizations across every industry should consider the risks posed by a wide variety of potentially problematic events, and then preemptively plan for them. Such careful preparation requires the analytics team to systematically generate mitigation solutions for each major “what if?” situation.

Solutions that address individual risks should be prioritized by the magnitude of exposure as well as the expense and ease of implementation. “Think about the worst-case scenario, what sorts of worst-case scenarios might exist and what triggering events might cause those scenarios to happen,” Krishna suggests.

A data-driven analysis or simulation designed to determine an organization’s ability to deal with a crisis situation can help it be ready for the day a black swan lands on its front steps. Krishna notes that this type of “stress testing” can gauge the level of readiness. “[Preparation] is really all about imagining the unimaginable, understanding what’s going to blow up ... [and] to be able to determine what corrective actions are needed,” he explains. “That is becoming very



2008:

The financial crisis that nearly caused the collapse of the world’s financial system led to a global recession.

2001:

The collapse of the dot-com bubble caused many companies to go out of business. Companies that were able to adapt quickly were able to survive and flourish.

1987:

On Black Monday when the Dow Jones Industrial Average dropped 508 points—the largest single-day percentage drop in history—the market value of companies immediately decreased.

1982:

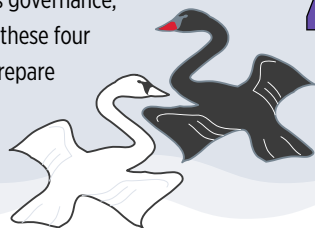
Large American banks lost almost everything they had ever earned after South and Central American countries defaulted on their loans.

4 Steps to DISRUPTER ANALYTICS

Although a black swan event is nearly—if not totally—impossible to predict, a disrupter analysis that measures an organization’s capacity to handle improbable scenarios can help the business prepare.

Conducted by an enterprise risk management team, often with internal and/or external support, the analysis can be used to periodically stress test an organization and assess its ability to withstand high-impact events.

Dilip Krishna, a director in Deloitte & Touche’s governance, regulatory and risk strategies practice, offers these four steps for developing a disrupter analysis to prepare for the day when a black swan swoops in:



- 1. Map the Enterprise**
Record the “shape” of the company, including its geographic footprint, operations, supply chain composition and construction. Be sure to include all of the various channel partners and customers.
- 2. Create a List**
Compile a comprehensive summary of potential black swan events that could strike the organization and cause extensive damage. Include a wide range of events such as environmental, regulatory, economic and technological situations that could have a significant impact.
- 3. Ask ‘What If?’**
Armed with the map and list, ask what would happen to the company if the scenarios, or even combinations of them, occurred.
- 4. Form a Contingency Plan**
Create mitigation options for each major “what if” scenario. Having fast access to these mitigation options, each tailored to address a specific situation, will enable the organization to respond when a crisis strikes.

much an accepted approach ... certainly something that, from a regulatory standpoint, is becoming mandatory for a number of financial institutions.”

Businesses that identify a possible event early on and take evasive actions are usually in the best position to ride out the crisis. Krishna advises companies to carefully map out the exact steps they will need to take in various types of crisis situations. “Then document those actions so that if any of the expected scenarios occur, there will be no second-guessing,” he points out. “It’s simply a matter of executing what’s already been documented; executing that game plan, if you will.”

IDENTIFY THE UGLIEST DUCKLINGS

Predictive analytics performed on integrated data can help identify potentially business-shattering events. Analytics can also provide valuable insights from past black swan encounters.

After an attack, a careful examination of key analytics, actions and environmental factors can reveal oversights or lapses that might have caused or enabled a black swan.

“Hindsight, as they say, is 20/20,” Long states. “Working backward, it’s easy to see what could have or should have been done to avert the event or soften the impact.”

Surviving a disruptive event can be the catalyst for thinking differently about risk management. “A black swan event has the benefit of being able to focus an organization on risk overall,” Krishna notes. “Bigger risks might get headed off by an organization just getting its mind around risk management overall and thinking through risk in a more holistic manner, which could then help the organization survive.”

Companies will never be able to completely mitigate the threat of unexpected events. They can, however, rely on analytics to give them as much warning as possible. Analytics can provide the insights to assess an organization’s vulnerability and form plans to evade different types of events or lessen their impact (or choose to accept the risk by not taking any action). The same insights can also help determine which ugly ducklings that start out as small annoyances are most likely to turn into high-impact black swans. **T**

John Edwards has covered the technology industry for more than two decades.