Deloitte.

Enterprise Risk Management (ERM)

Key Concepts and Practical Approaches

Institute of Internal Auditors

Long Island Chapter

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Introduction – Ian Waxman

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Experience Summary

- Senior Manager in Deloitte's Enterprise Risk Management Practice
- 14+ years of experience in ERM
- Specializes in ERM program design, stand-up, governance, risk assessment, risk analysis projects, and building awareness for risk programs
- Leader within Deloitte's national ERM Center of Excellence
- Associate in Risk Management (ARM)
- Has delivered numerous training sessions on ERM, risk assessment, and strategic risk management

Discussion outline

1. Some key ERM Concepts
2. ERM: Where are we now?
3. Strategy and Risk
4. ERM 2.0

Some key ERM concepts

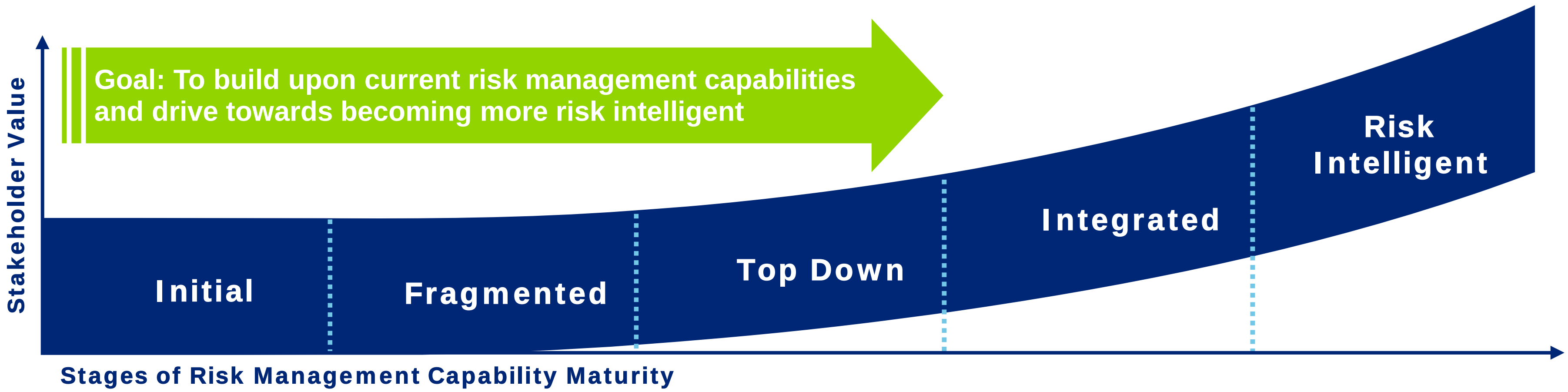
- **Holistically manage risks** – Have your executives and board agreed on what risks your company should be addressing? Are your key risks being addressed from an enterprise perspective?
- **Create value** – What are the risks to your company's strategies?
- **Leverage risk management activities** – What other risk assessments and risk management activities are performed at your company?
- **Identify emerging risks** – Are early warning signals reviewed to anticipate and respond to emerging risk trends affecting achievement of business performance targets?

ERM should be:

- Proactive
- Consistently applied
- Broad and tested
- Sustainable
- Practical / Pragmatic
- Unobtrusive

How mature is your company's ERM?

The path to developing an integrated/strategic ERM capability

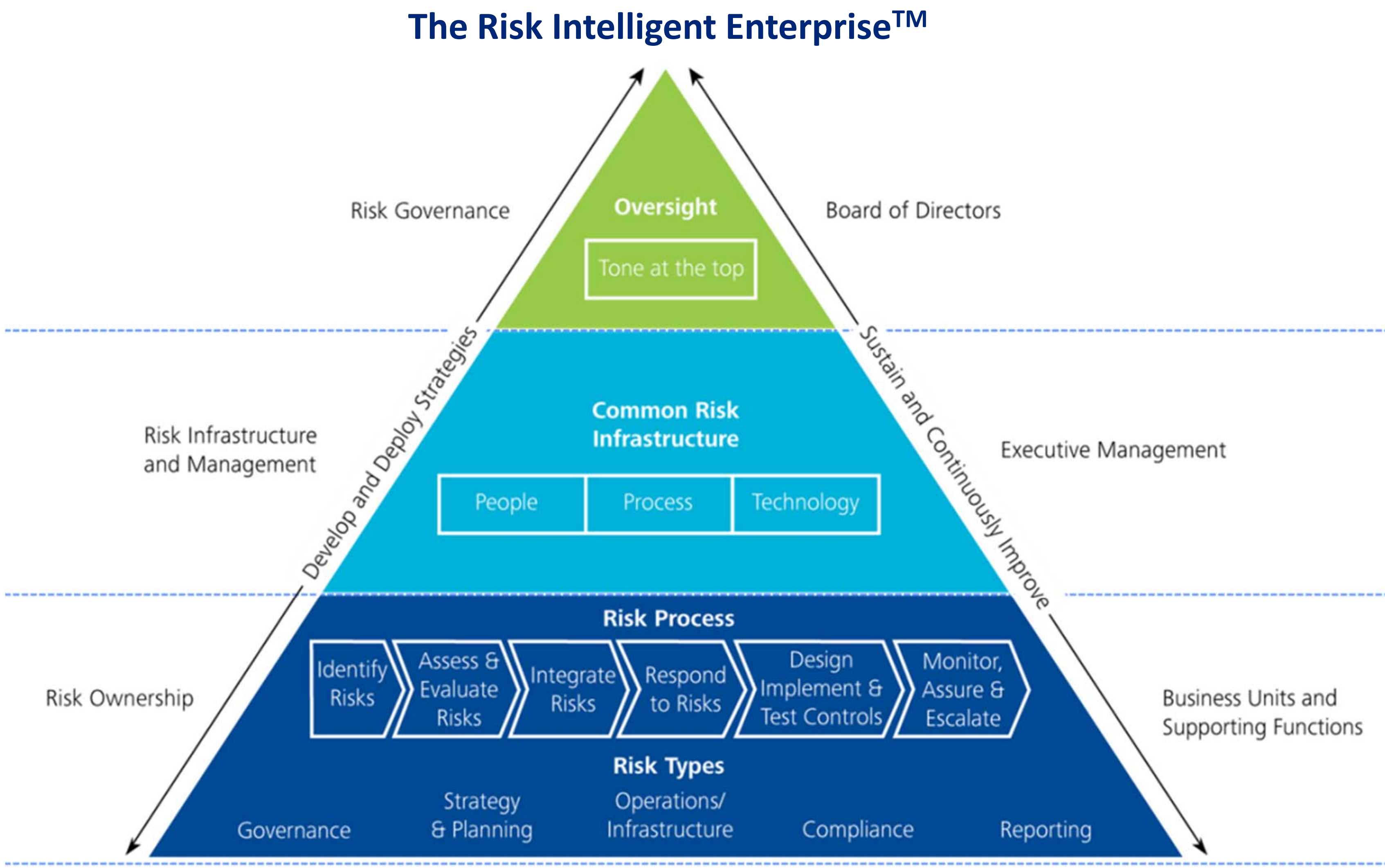


Illustrative Attributes				
Initial	**Fragmented**	**Top Down**	**Integrated**	**Risk Intelligent**
• Ad hoc/chaotic • Depends primarily on individual heroics, capabilities, and verbal wisdom	• Risk managed in silos • Limited alignment of risk to strategies • Disparate monitoring and reporting functions • Limited focus on the linkage between risks • Limited alignment of risk to strategies	• Common risk framework, program statement, policy • Enterprise-wide integrated risk assessments • Communication of top strategic risks to Board • Board and executive risk governance structure • Knowledge sharing across risk functions • Awareness activities • Dedicated team to manage risk	• Coordinated risk management activities across silos • Risk appetite fully defined • Enterprise-wide risk monitoring, measuring, and reporting • Technology-enabled processes • Contingency plans and escalation procedures • Risk management training • Linkage with quality assurance	• Risk discussion is embedded in strategic planning, capital allocation, product development • Early warning risk indicators used • Linkage to performance measures and incentives • Risk modeling/scenarios • Industry benchmarking used regularly

Illustrative

Proactively managing your key risks

An ERM Framework – oversight, infrastructure, and process

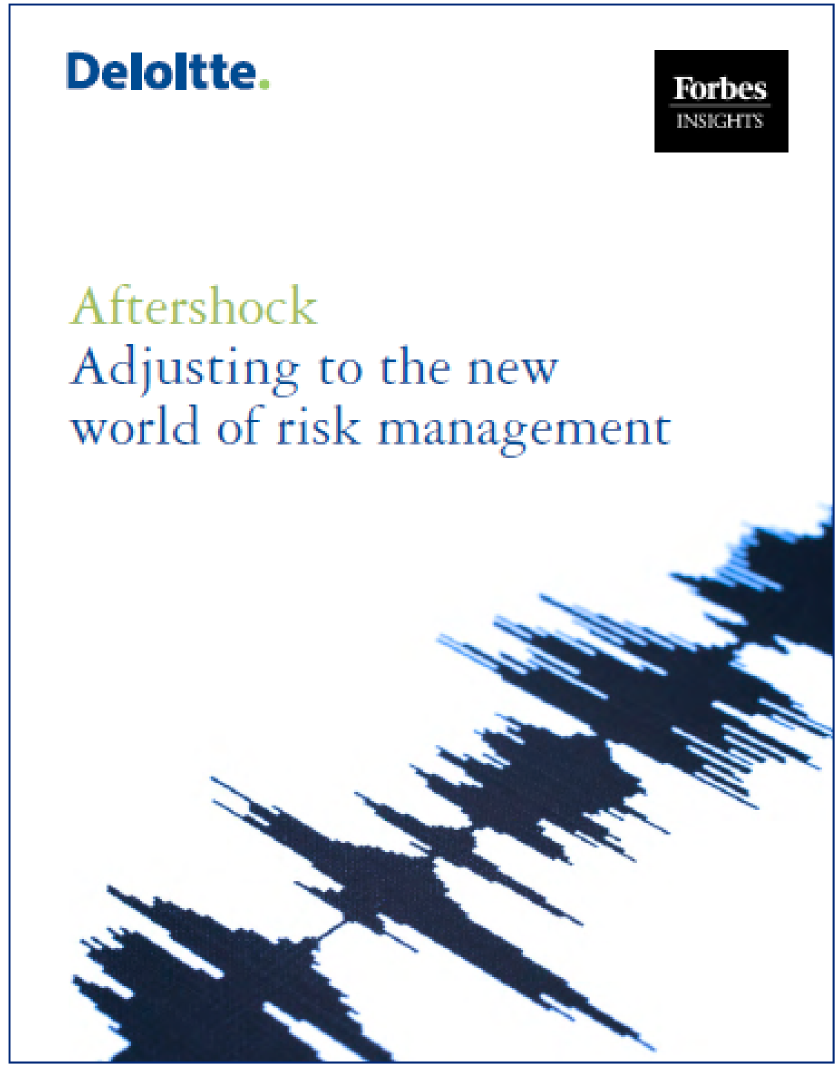


Aftershock: Adjusting to the New World of Risk Management

2012 Risk Management Survey

In October, 2012 Deloitte* and Forbes Insights surveyed 192 U.S. executives:

- Leaders expect risk to become more volatile
- More than half said companies will invest in continuous risk monitoring, 29% are in the process of automating risk reporting
- 27% identified social media as one of the most important sources of risk
- 28% said lack of awareness is the most common barrier to effectiveness
- Risk management now lives in the C-Suite
- 91% plan to reorganize and reprioritize approaches to risk management in some form in the coming three years



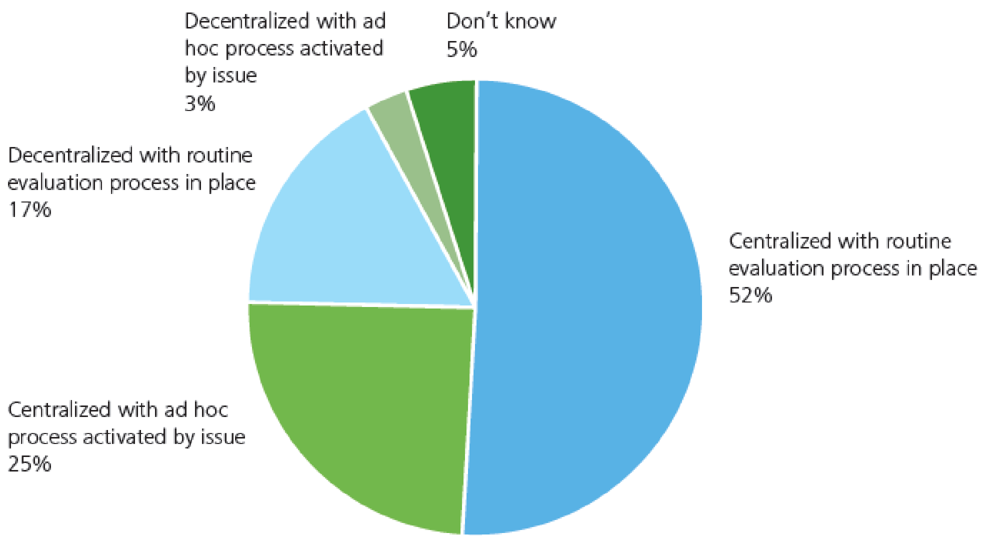
* As used in this document, "Deloitte" means Deloitte & Touche LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries. Certain services may not be available to attest clients under the rules and regulations of public accounting.

ERM embedded into the entire organization

More than three-quarters of respondents surveyed (77%) said that their companies employ a centralized model with regard to risk management.

According to the survey, the centralized model should continue to prevail: When asked what changes they believe their companies would make to their risk management process in the next three years, more respondents (36%) pointed to increasing centralization than to increasing decentralization (19%).

Figure 3. How would you describe your risk organization and risk management process?



Note: Numbers may not add up to 100% due to rounding.

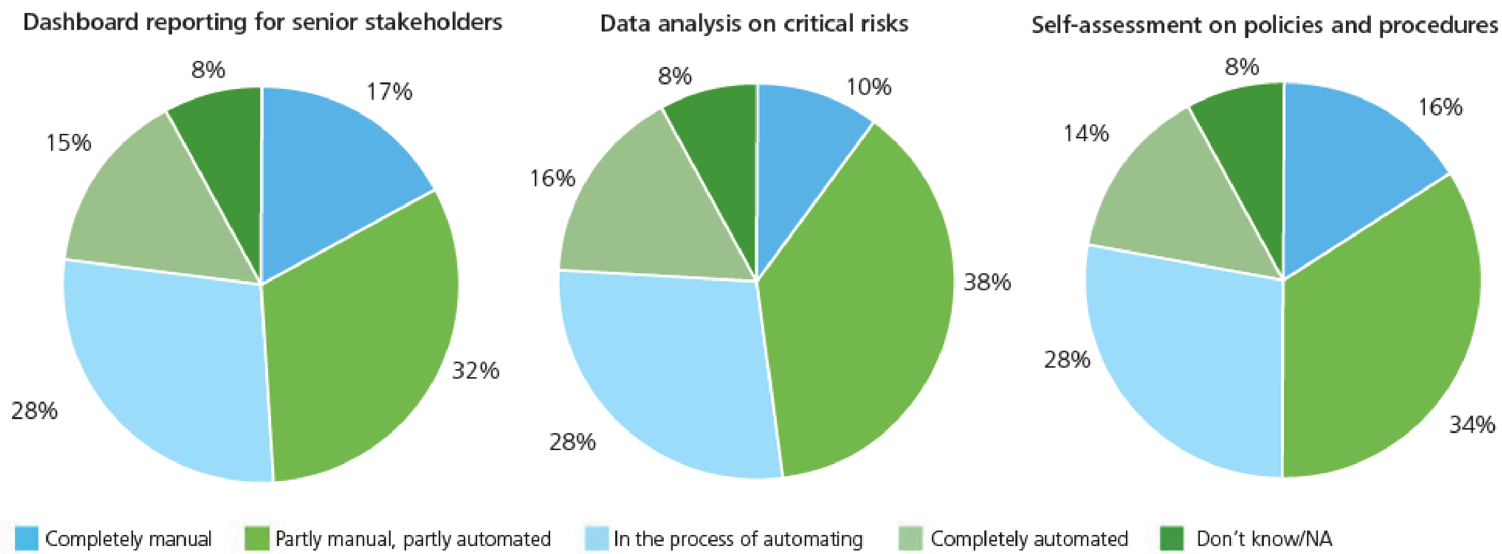
Current risk management systems and processes are not highly automated

Currently, dashboard reporting for senior stakeholders, data analysis and self-assessment are most often a mix of manual and automated processes. That said, almost a third (28%) of respondents reported that their companies are in the process of automating their risk reporting.

"I think we are just scratching the surface. We consider analytics the next big frontier for risk management. If you can leverage analytics to identify risk and take actions ahead of your competitors, you are essentially turning a hazard into an opportunity."

- Luis Custodio, Chief Risk Officer, IBM

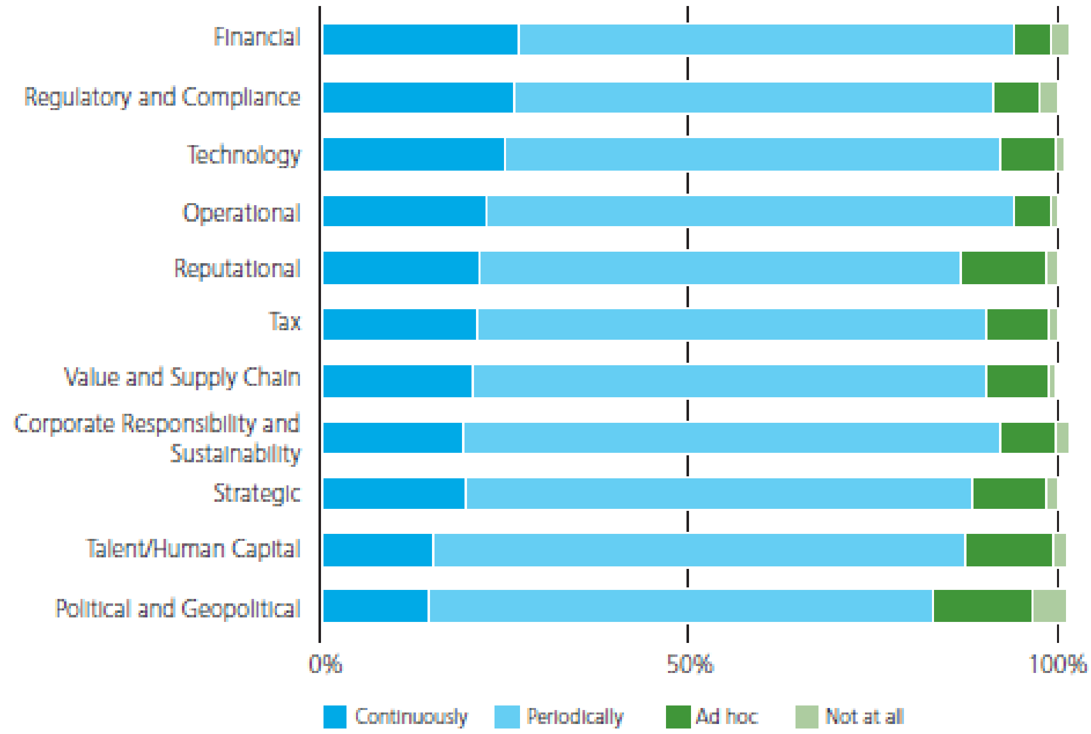
Figure 9. To what extent has your organization automated the following risk reporting processes?



Continuous risk monitoring rare today, but on the rise

While executives recognize the importance of continuous monitoring, fewer than a quarter of respondents said that most risks are continuously monitored in their companies.

Figure 8. How often does your company assess the following risks?



Note: Numbers may not add up to 100% due to rounding.

Strategic and technology risk management to see highest budget increases

Strategic risk and technology risk were identified by respondents as the two areas where budgets will increase the most; 8% of respondents said strategic risk budgets will rise more than 50%, and 9% of respondents said the same for technology risk.

Interviews reveal that companies are working with existing resources, but indicate a willingness to allocate additional funds to risk management if necessary.

Exploring Strategic Risk
2013 Risk Management Survey

In the spring of 2013, Forbes Insights, on behalf of Deloitte Touche Tohmatsu Limited, conducted a global survey of more than 300 major companies around the world to better understand how businesses are managing strategic risk:

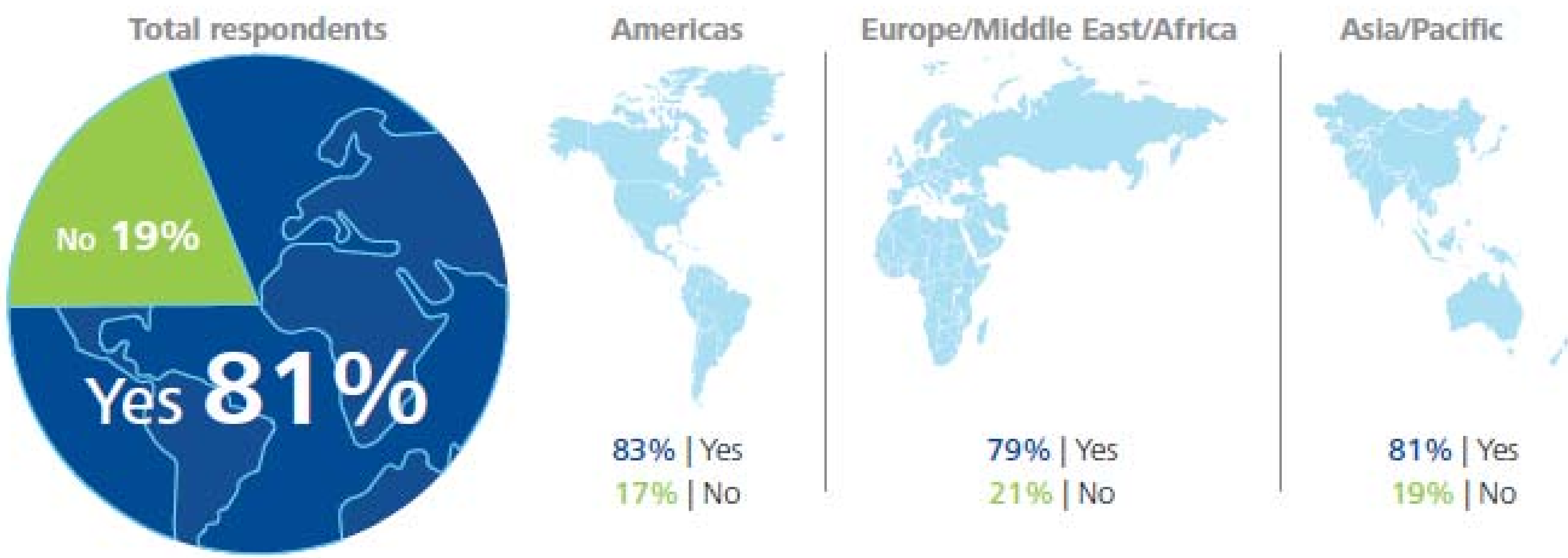
- Strategic risk is emerging as a key focus for businesses around the world
- Companies are changing their approach to strategic risk management
- Integrating risk with the business strategy
- Strategic risk management is a board and CEO-level priority
- Reputation cited as the #1 risk to companies' business strategies
- Emerging technologies have the power to disrupt business models
- Human capital is noted by many as being a strategic asset

Strategic risk emerges as a key focus for businesses around the world

The survey shows that the vast majority of companies are now explicitly and actively managing strategic risks – and the results were quite consistent across all regions and industries.

What's more, many companies are taking a broader view that doesn't just focus on the risks that might cause a particular strategy to fail, but on whatever key risks could affect a company's long-term positioning and performance.

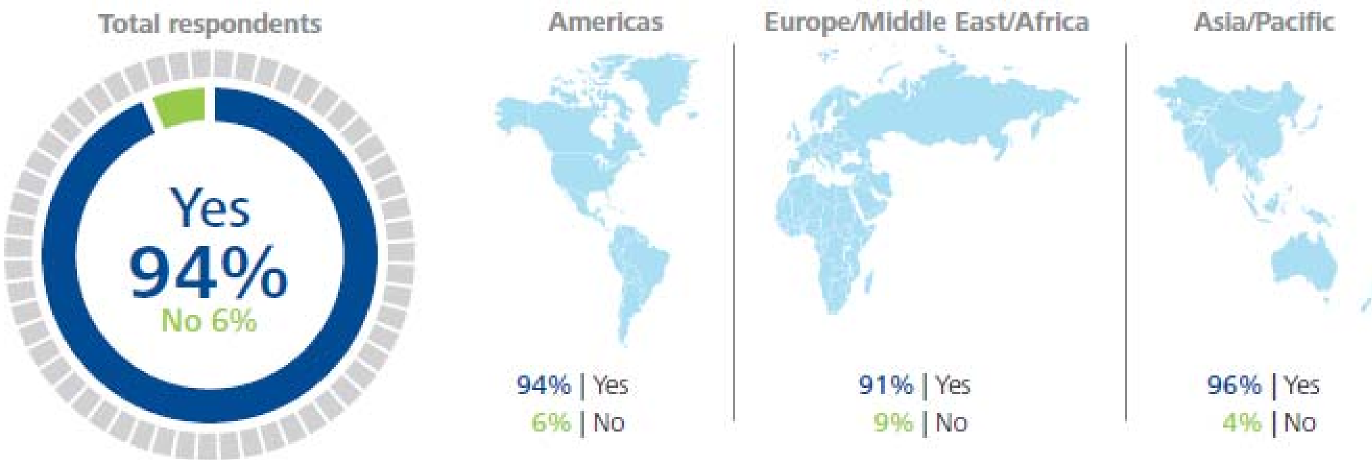
Q: Does your organization have an explicit focus on managing strategic risks?



Companies are changing how they manage strategic risks

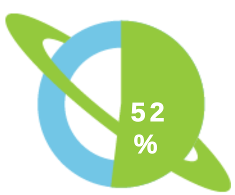
94% of companies say they aren't just increasing their focus on managing strategic risks; they are changing how they do it.

Q: Has your approach to managing strategic risks changed in the last three years?

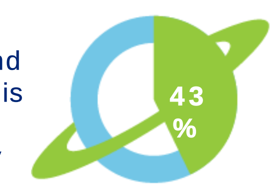


Q: How has your approach to managing strategic risks changed in the last three years? *(Respondents could choose more than one answer. The top three are shown below)*

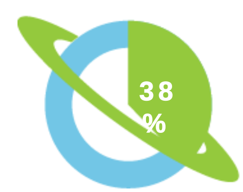
Increased frequency and budget for monitoring/ managing risks



Started to monitor and manage this area continually



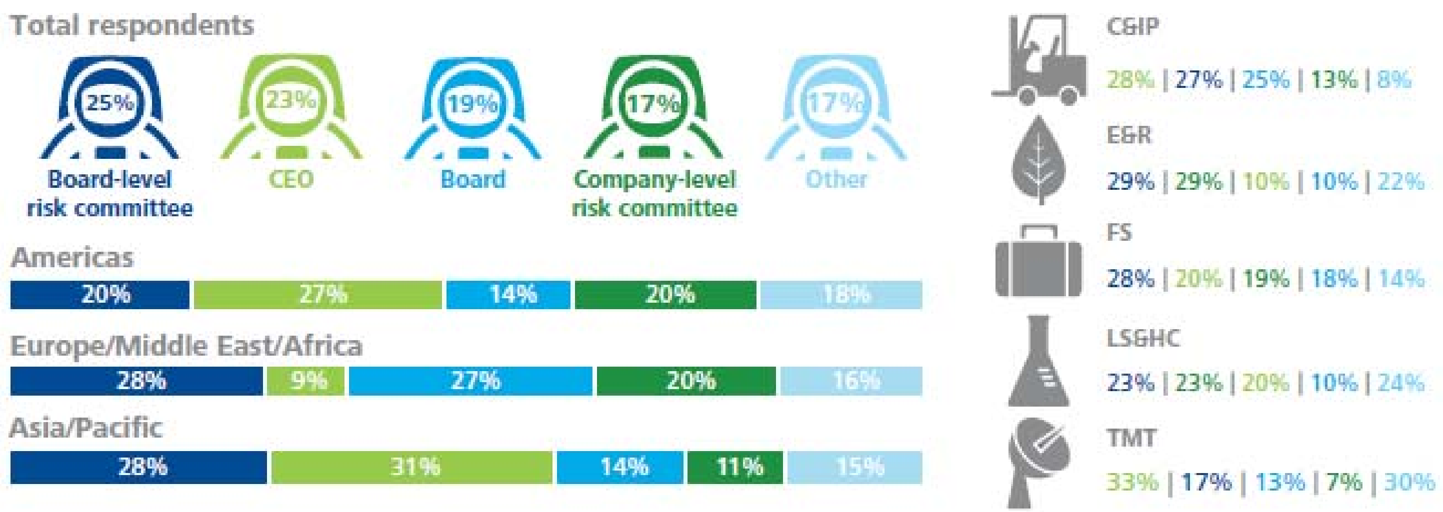
Increased the number of executives assigned to this area



Strategic risk is being driven by CEOs and boards

Two thirds of the surveyed companies say the CEO, board or board risk committee has oversight over strategic risk.

Q: Who primarily determines your company's approach to managing strategic risk?



"When we develop a strategy we think about the risks associated with it, but also what [business] risks are minimized by following that particular strategy." Reto J. Kohler, Managing Director, Head of Strategy, Corporate & Investment Banking, Barclays

Reputation cited as the #1 risk

Reputation is now rated as the highest impact risk area – not just overall, but for most individual sectors as well. Three years ago, reputation was already the top risk area in financial services - and remains so today.*

Q: Which of the following risk areas have the most impact on your business strategy (three years ago, today, and three years from now)?

(Respondents could choose more than one answer. The top three are shown below)

2010	Today	2016
41% | Brand	40% | Reputation	29% | Economic trends
28% | Economic trends	32% | Business model	26% | Business model
26% | Reputation	27% | Economic trends | Competition	24% | Reputation | Competition

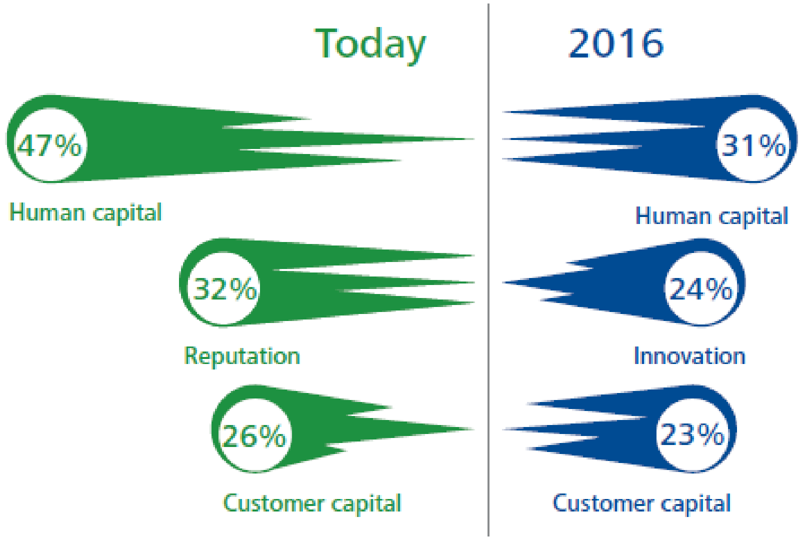
However, in the energy sector, for example, reputation risk wasn't even in the top five three years ago, but today is number one – perhaps fueled by headlines about fracking, oil spills, and the Alberta tar sands. A similar rise in reputation risk has occurred in life sciences and healthcare, likely driven by healthcare reform efforts in the US and ongoing concerns about the skyrocketing cost of pharmaceuticals and health services.

*To view industry results, visit www.deloitte.com/strategicrisksurvey

Companies invest in strategic assets to reduce risk

Many respondents view human capital – which includes employees, partners, and contractors – as a strategic asset that is worth investing in. Innovation pipeline and customer capital are also important areas for investment.

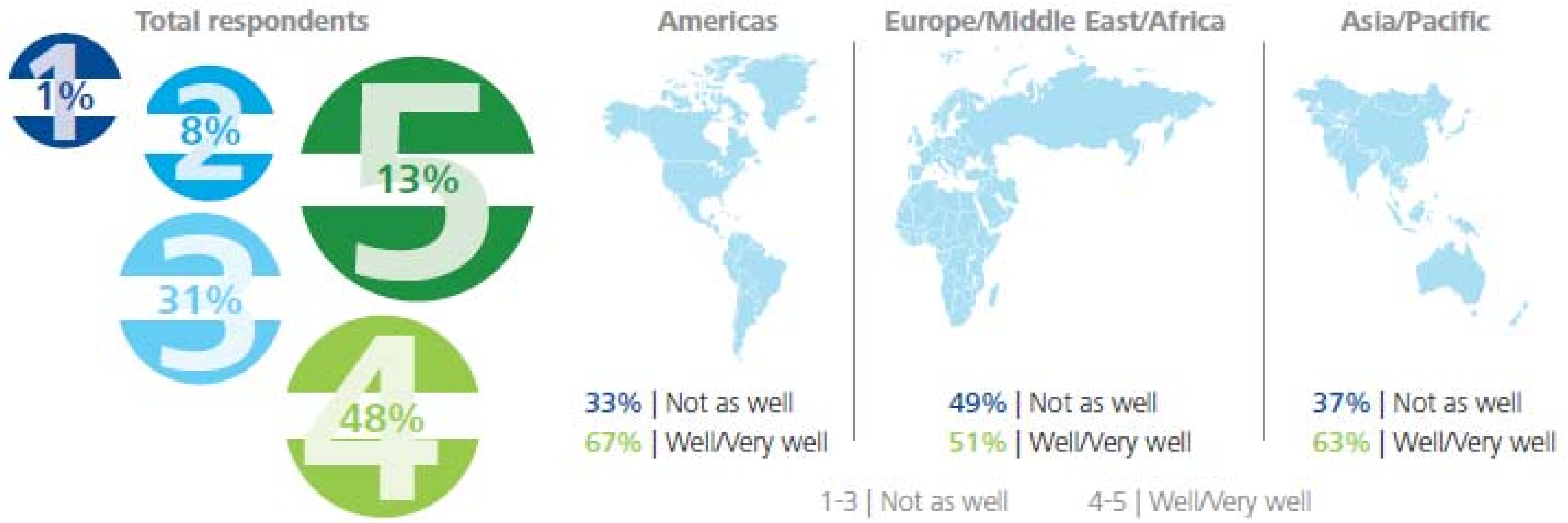
Q: Which assets have and will have the most strategic value to your organization? *(Respondents could choose more than one answer. The top three are shown below)*



Risk management is now being integrated with business strategy

Perhaps the biggest change is that more companies are integrating strategic risk analysis into their overall business strategy and planning processes. But that's only part of the story. According to the overall results, only 13% of companies rate their risk management programs 5 out of 5 in terms of supporting the development and execution of strategy.

Q: On a scale of 1 to 5, how well do you think your risk management program supports your ability to develop and execute your business strategy? (5 indicates very well)



How is risk management reflected in your business strategy

ERM Process		*Illustrative* Strategic Planning Process
RISK IDENTIFICATION AND ANALYSIS	▪ *Risks relevant to strategic plan?* ▪ *New risks created?* ▪ *Risks that can become opportunities?*	CONDUCT ASSESSMENT • *SWOT ANALYSIS* • *GAP ANALYSIS* • *STRATEGIC ISSUES*
RISK RESPONSE	▪ *Residual risk acceptable?* ▪ *Additional mitigation required?*	SELECT STRATEGIES / INITIATIVES
RISK MONITORING AND REPORTING	▪ *Risk events impeding execution?* ▪ *Key risk indicators (KRIs) and early warning signals?*	STRATEGY EXECUTION • *OPERATIONAL PLANS* • *MONITORING AND REPORTING*

Case Study: Strategic Risk Integration

- The strategic planning process will include accountability for risk identification and risk management
- ERM will play a key role in helping to facilitate the strategic planning process by providing risk expertise and tools so strategy leads can manage risk
- ERM has developed a Risk Appetite Framework that will help align and make consistent the risk management decisions associated with the strategic plan
- This formal risk appetite will be complemented by a risk tolerance framework that allows VA to measure whether its risk profile is within the stated risk appetite

The Risk Appetite Framework uses the scale below to consistently define the amount of risk we are willing to take in pursuit of strategic goals and objectives.

Risk Appetite Scale

Risk Appetite Approach	Risk Tolerant	Risk Neutral	Risk Averse
Risk taking vs. reward	Willing to take greater than normal risks	Balanced approach to risk taking	Takes caution and often accepts as little risk as possible
Risk response decision criteria	Risk response actions are taken only when a strong case can be made for cost effectiveness of potential outcomes	Risk response actions are made based on cost effectiveness, management priorities, and potential outcomes	Risk response actions are taken even though prevention costs are greater than expected incident costs

The case for enhanced risk measurement

Leading companies have deployed targeted risk measurement capabilities:

- Using sophisticated risk quantification techniques for top risks and strategic initiatives
- Developing tools and resources to facilitate business unit risk assessments

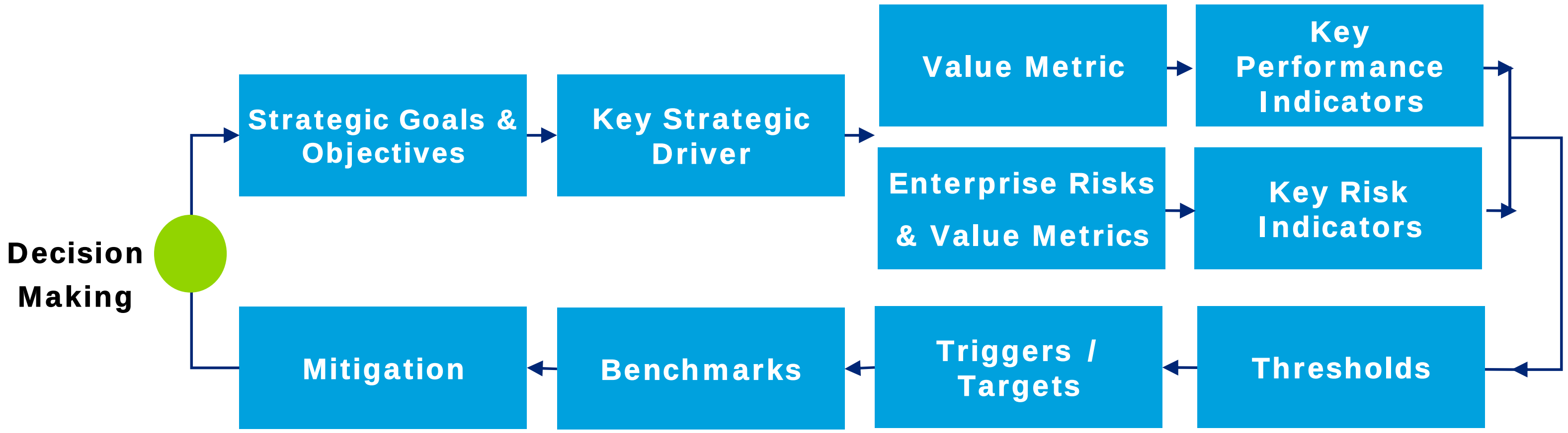
Benefits of risk quantification

Rationalize risk management costs	Improve business decisions	Other
▪ Efficient allocation of limited risk mitigation budgets ▪ Cost / benefit / value of incremental mitigation investments ▪ Identification of opportunities to reduce or eliminate controls	▪ Effective risk prioritization ▪ Understand incremental risk exposures of “new” business opportunities ▪ Enable risk / reward analysis (e.g., weighing negative impact of controls on revenue growth)	▪ Articulate to stakeholders how much risk is assumed ▪ Understand risk interactions (amplified risk, hedges) ▪ Make the business case to exploit risk to capture opportunities

Using KRIs to monitor risk and performance

Integrating KRIs into a company's performance monitoring and reporting process ties risk management effectiveness to bottom-line results by:

- Linking enterprise risks to performance metrics and proactive/corrective mitigation strategies
- Supporting enhanced business decision-making and resource allocation through analysis of leading indicators
- Providing insight into the true risk profile of an individual organization or function
- Benchmarking risks against performance goals and compliance requirements



Utilizing Scenario Analysis in risk management

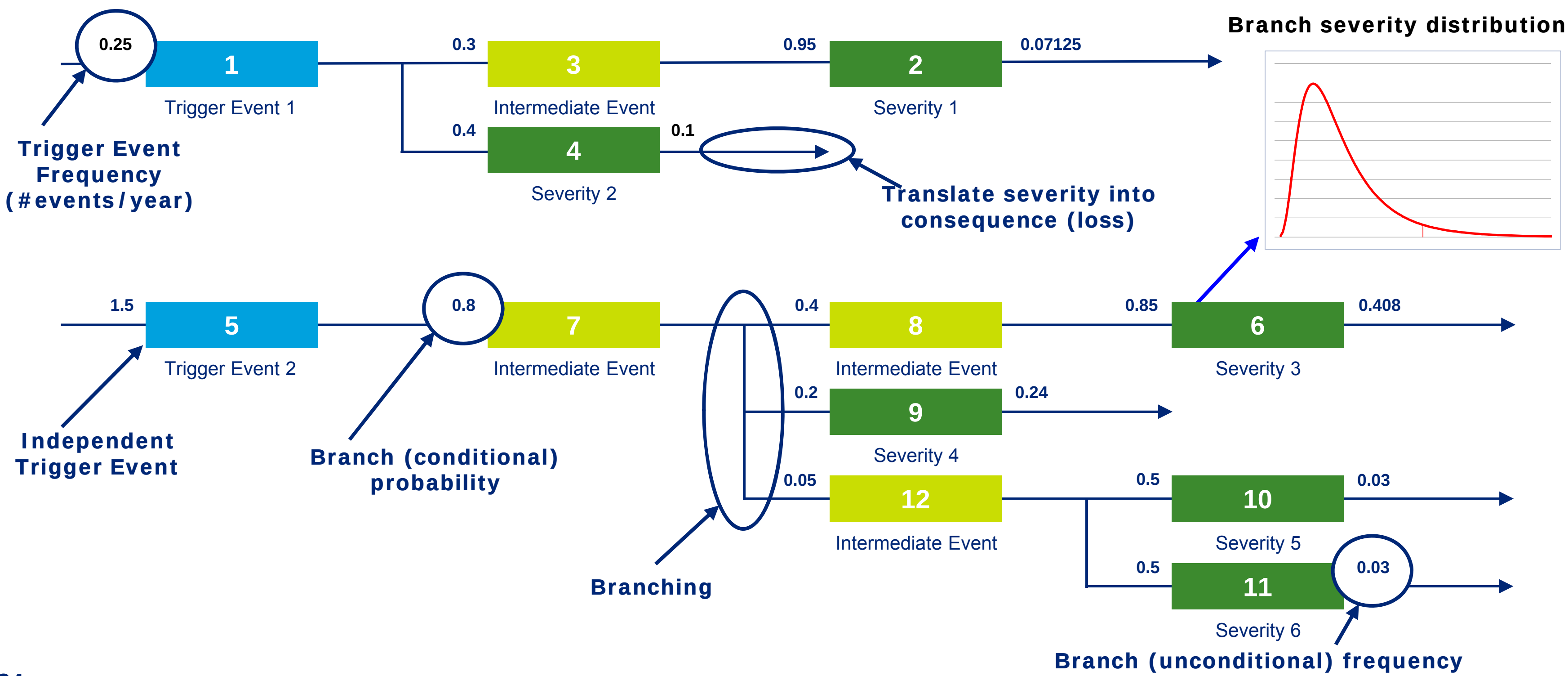
Scenario analysis is useful for assessing risks and tying them back to strategic objectives. Define risk scenarios, detailed key assumptions (conditions or drivers) that determine the severity of impact, and estimating the impact on a key objective (e.g., earnings)

Scenario Analysis	*"Troubled Waters"*	*Detailed Assumptions*	*EBIT Impact ($MM)*
	1. Currency changes impact competitive landscape	• 15% volume decrease • 20% price decrease • Sustained for 9 months • Recovery takes additional 9 months	$500
	2. Natural gas prices increase	• $5/MM Btu increase • Sustained for 12 months • No ability to pass through increase	-$150
	3. Crude oil prices increase	• 100% increase • Sustained for 3 months • Pass through 25% of cost increase	-$15
	4. Technology shift	• 15% volume decrease/year • 15% price decrease/year • $2MM less in R&D expenditures	-$275
	5. Competitive pressure	• 10% price decrease • Sustained for 24 months	-$200
	6. Supply chain disruption	• 10% volume decrease • Sustained for 6 months	-$175

Deloitte's Event Tree Model (ETM)

A dynamic scenario analysis methodology for risk quantification

- Traditional assessments focus on "likelihood" and "impact", which are high-level descriptions of risk
- As such, traditional risk assessments generally fail to address more detailed causal factors and consequences
- Risk management and key business decisions regarding risk require insight into these more detailed risk factors and loss consequences

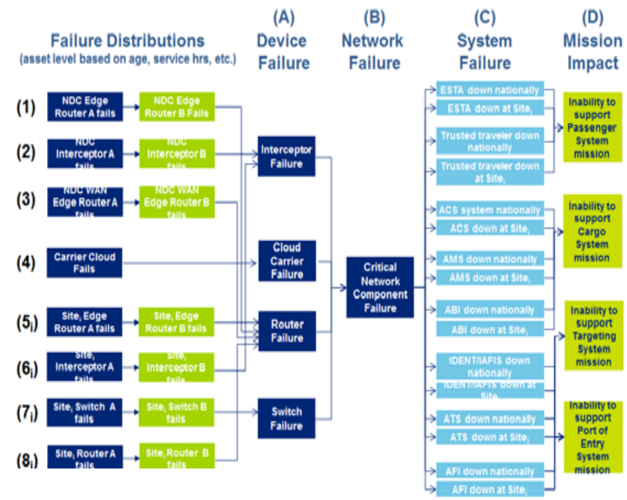


Risk modeling case study:

Risk of IT failure: budget allocation model

- **Client’s Challenge:** (1) What is the probability of mission impact due to the risk of a critical IT component failure; (2) What is the required IT budget to achieve mission objectives.

- **Approach:**
  - Conducted an assessment of the Client’s IT data center and network infrastructure.
  - Leverage the limited available historical failure data
  - Develop risk model to analyze the probabilities of mission impact due to an IT component failure
  - Perform what-if analyses to provide insight on a wide range of possible scenarios.



- **Results:** Identified the probability for a failure to exceed hours of down-time for each infrastructure component. Circuits required additional budget allocations.

Hours of Down-time	Switch Pairs	Interceptor Pairs	Router Pairs	Circuits (Dual with Diversity)	Circuits (Dual without Diversity)	Circuits (Single)	Mainframe HW Failures/	Server HW Failures	Any Location with Dual (with Diversity) Circuit	Any Location with Dual (without Diversity) Circuit	Any Location with Single Circuit
1	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.01% (or less)	5.44%	17.47%	1.53%	0.01% (or less)	1.55%	7.13%	18.71%
4	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.01% (or less)	3.60%	10.65%	0.01% (or less)	0.01% (or less)	0.01% (or less)	3.64%	10.73%
8	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.01% (or less)	2.20%	6.89%	0.01% (or less)	0.01% (or less)	0.01% (or less)	2.22%	7.19%
24	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.69%	2.30%	0.01% (or less)	0.01% (or less)	0.01% (or less)	0.77%	2.61%

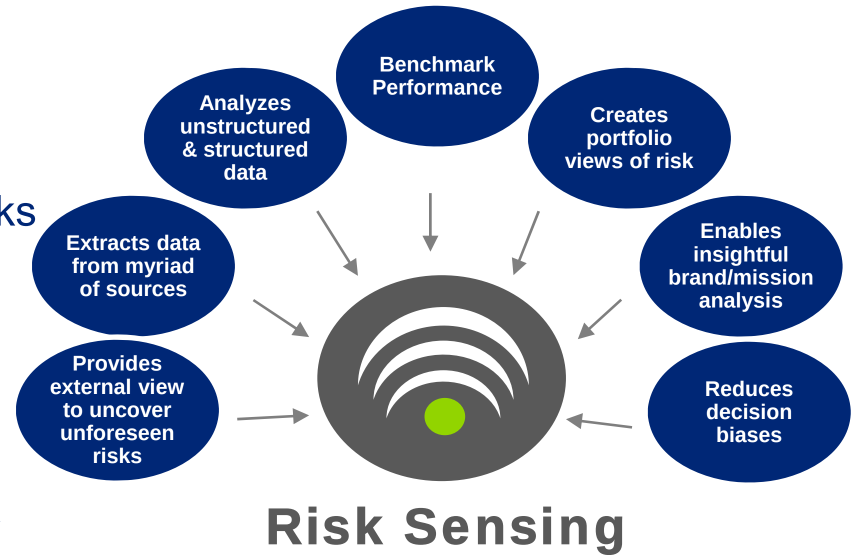
Risk sensing

Getting ahead of known and unknown risks

- Traditional Risk Management programs can often be reactive, slow, and biased resulting in many risks going unmonitored and unmitigated until it is too late.
- Few organizations are equipped to detect new or unforeseen risks that are emerging.
- Organizations have access to larger varieties of information in higher volumes, communicated at higher velocities.

Consider Risk Sensing:

- Forward-looking insights into risks
- Identify, monitor, and respond to emerging risks
- Prioritizes across a portfolio of risks with drill down capability
- Monitors and assesses continuously evolving risk trends and opportunities for improvement
- Informs and confirms leadership's view of risk
- Supports decisions based on quantitative, justifiable metrics
- Builds tailored, interactive, and intuitive reporting dashboards for any organizational risk need



Risk Sensing: A line-of-sight into emerging risks and opportunities

How does risk sensing work?

Risk sensing ties enterprise objectives to outcomes

Program Design	Scanning Sources	Information Extraction	Visualization, Analysis and Response
Design and focus of risk sensing is customized to the specific business challenge.	The risk sensing platform scans the Internet (or internal sources) and forms a dynamic risk profile.	Methodical extraction of structured information from unstructured data using natural language processing tools.	Insights to executives through dynamic user interface displays of real-time risk intelligence presents opportunities to manage emerging risks.

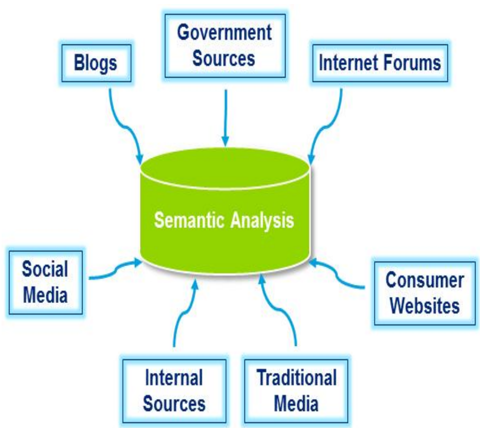
Strategic Objectives

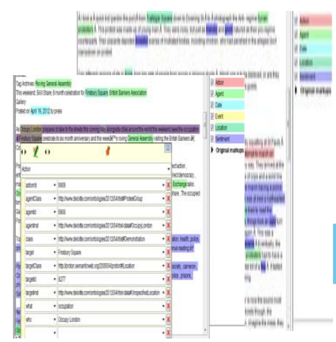
Event Patterns
Occurrences or milestones required to attain objectives

Risks
Potential for organizational loss, harm or diminished opportunity for gain in achieving objectives

Indicators
Information used to measure the potential for risks to occur

Sources
Internal and external information used to track Indicators





Risk sensing case study: Deloitte

Issues

- **Clients and industries**
  - Client transformation
  - Demand shifts
  - Industry trends
- **Economy**
  - Technology spending
  - Business investment
  - Globalization
- **M&A**
  - Emerging markets
  - Deal flow
  - FDI
- **Regulations**
  - Health reform
  - Financial / tax reform
  - Sustainability
- **Technology**
  - Analytics/"Big Data"
  - Cloud
  - Mobile
  - Social media/business

Intelligence

- **Reputation**
- **Enterprise management**
- **Competitive intelligence**
- **Regulatory and legislative**
- **Private investment intelligence**
- **Sector trends**

Insights

- **Core businesses we should emphasize**
- **Adjacent/new businesses we should consider**
- **How we can differentiate**
- **How we can protect/build brand leadership**
- **How we can deliver more and more efficiently**
- **How we can improve financial results**

Impact

Client/business growth
- Business units
- Market channels

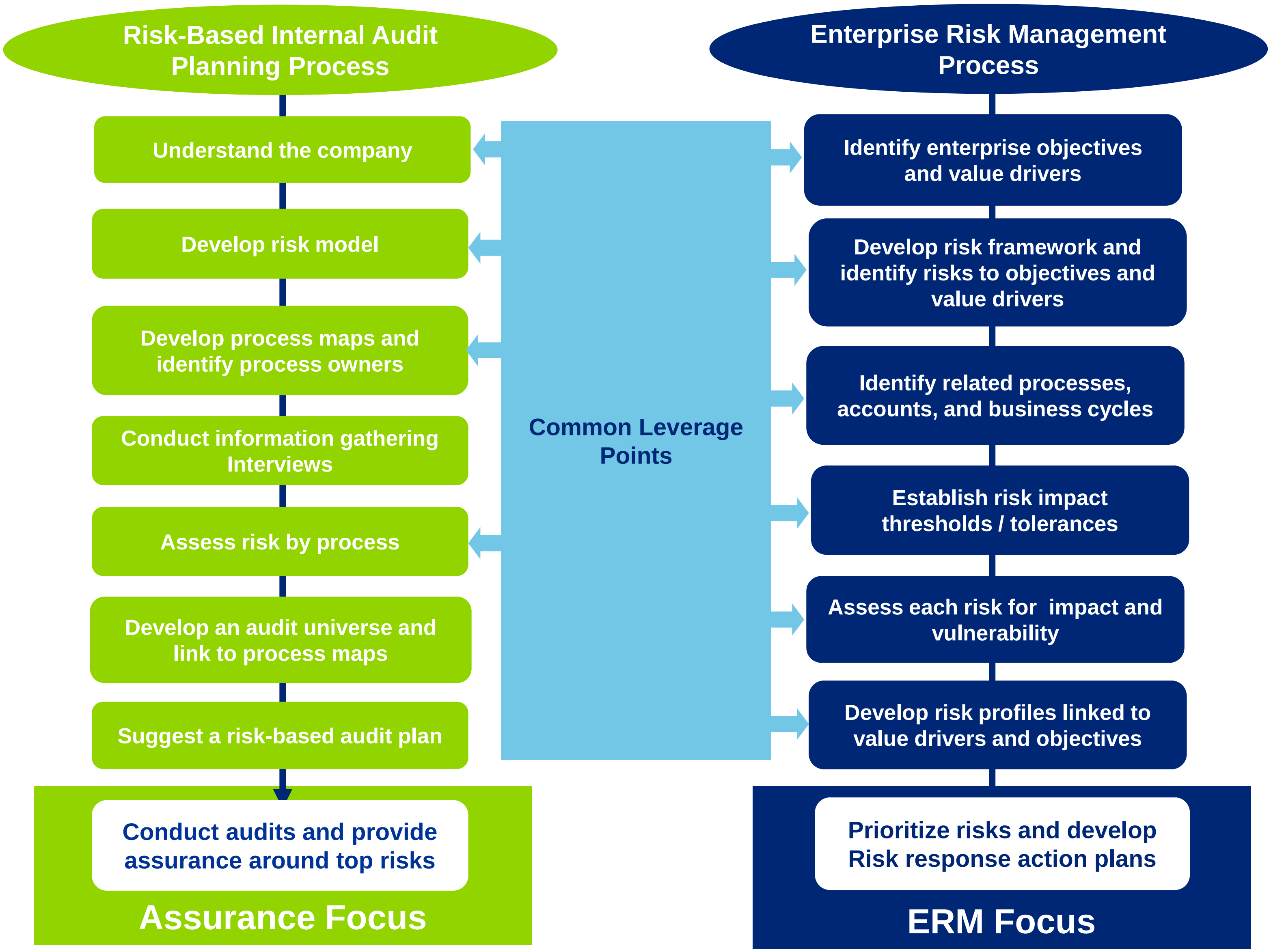
Strategic positioning
- Strategy, brand innovation
- Regulatory affairs
- Quality and legislative affairs

Improved performance
- Finance and administration
- Talent
- IT
- Legal

Internal audit's role in ERM

Internal Audit's Role	Major ERM Activities
Core role, consistent with standards	• Providing assurance on the risk management process
	• Providing assurance that risks are correctly evaluated
	• Evaluating risk management processes
	• Evaluating the reporting of key risks
	• Reviewing the management of key risks (includes testing controls)
Should be performed with certain safeguards	• Facilitating identification and evaluation of risks
	• Coaching management in responding to risks
	• Coordinating ERM activities
	• Consolidated reporting on risks
	• Championing establishment of ERM
	• Developing risk management strategy for Board approval
Should not be performed by Internal Audit	• Setting risk appetite
	• Imposing risk management processes
	• Providing management assurance on risks
	• Making decisions on risk responses
	• Implementing risk responses on management's behalf
	• Assuming accountability for risk management

Identifying key internal audit & ERM leverage points



Defining internal audit's focus

Internal Audit (IA) can provide assurance that risks identified as high impact and low vulnerability (i.e., low likelihood) have effective mitigation strategies and controls. IA can also provide assurance that risks requiring enhanced mitigation (high impact and high vulnerability) are being effectively addressed by management.

High

Impact

Assurance of Preparedness

- Audit / inspect / test existing risk mitigation measures
- Confirm completion of risk mitigation action plans
- Test compliance with risk controls and ongoing risk monitoring process

Enhance Risk Mitigation

- Confirm management ownership and accountability for resolution
- Risk Committee monitoring
- Validates corrective actions are implemented
- Assess ongoing risk monitoring process

Redeploy Resources

- Management reviews the efficiency of existing risk mitigation approach
- Lower priority audit attention
- Advisory support to management to rationalize more efficient control measures

Measure for Cumulative Impact

- Determine any hidden or consequential damages
- Assess for frequency of occurrence and aggregated impacts
- Focus on monitoring key trouble signals and trend analysis

Low

Vulnerability

High

Q & A

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