MARSH

INSIGHTS | December 2016

2017 Communications, Media, and Technology Risk Study

MARSH & McLENNAN COMPANIES

CONTENTS

INTRODUCTION

Welcome to Marsh's *2017 Communications, Media, and Technology Risk Study*. The fast pace of innovation that defines communications, media, and technology (CMT) companies brings a host of risks related to everything from shifts in customer demands to changes in regulations to industry consolidation.

Building off the findings from our 2016 study, we set out to shed some light on what's behind the increasing complexity in the risk environment, something that most CMT risk professionals pointed to as a key concern. Not surprisingly, we find CMT professionals looking for answers to a number of similar questions, including:

- What happens if one of our data centers goes down?
- Where does the liability lay if hackers attack us or our customers?
- If the electronic components we manufacture fail, what is the right response?
- Do we have effective risk transfer in place to protect our bottom line to cover our intellectual property risk?
- Do we understand the changing nature of contractual risks?

To help find the answers to those and other questions, we surveyed 120 risk professionals from various CMT sectors. While all of them do business in the US, most also had operations and risks in other parts of the world.

We sincerely thank those who participated in the survey, and hope all who read it will find it useful. And we'd like to hear what you think about the results. Please drop me a line at the address below, contact your Marsh representative, or Tweet us @MarshGlobal, using the hashtag #CMTStudy17.

Tom Quigley
US CMT Practice Leader
thomas.quigley@marsh.com

RISK LANDSCAPE

88%

of risk professionals in the communications, media, and technology industries say their company's risks will become more complex and/or greater in scale in the next few years.

Source: Marsh 2016 CMT Risk Study

WHAT IS DRIVING RISK COMPLEXITY FOR CMT COMPANIES?

Rapid innovation broadens the list of potential new exposures.

$230 billion

invested in the "Internet of Things" in 2016 by US companies; expected to grow to $370 billion by 2018, according to International Data Corp.

New regulations and contractual risks are increasing.

Data Privacy

Federal Communications Commission (FCC) passed sweeping privacy rules for internet service providers, EU/US agreed to Privacy Shield and sharing economy regulations increased.

M&A and restructuring increase uncertainty.

11 megadeals

valued above $10 billion each occurred in the technology industry in 2015 and the first 3 quarters of 2016.

RISK LANDSCAPE

CMT COMPANIES' RISK ISSUES WERE REFLECTED IN NEWS THROUGHOUT 2016

Issues involving or affecting CMT companies are woven into the daily drumbeat of technological, political, and economic news. Lawsuits, new technologies, increased regulations, business decisions, cyber-attacks, and competition were some of the key drivers of change for CMT companies in 2016. Here are a few developments that changed the risk landscape in 2016.

- EU-US Privacy Shield framework designed to comply with data protection requirements.
- Gawker/Hulk Hogan lawsuit surfaces new questions about privacy expectations for public figures.
- $230 billion+ to be invested in "Internet of Things" (IoT) devices in 2016 by US organizations.
- FCC passes new privacy rules for internet service providers.
- FBI requests manufacturer aid in unlocking smartphones, raising ethical concerns.
- The Health Insurance Portability and Accountability Act (HIPAA) drives stricter compliance audits for IT vendors.
- Tech companies begin contracting directly for video content.
- Reputational risks increase as terrorists use mainstream social media services to organize.
- Alternative video services grow.
- Lawsuits against well-funded technology disruptors.
- Smartphone manufacturers face distracted driving lawsuits.
- The US Senate voices concern about cybersecurity in autonomous vehicles.
- The National Labor Relations Board (NLRB) issues landmark decision regarding joint employment standards.
- Changes are proposed to the Digital Millennium Copyright Act.
- IoT devices are used to cause network disruption with denial-of-service attacks.
- Data center network outages and contractual obligations cause disputes.
- Personal electronics move from passive data collection to being diagnostic tools.
- Communication services companies step up acquisitions of content creators.

RISK COMPLEXITY

RISKS FOR COMMUNICATIONS, MEDIA, AND TECHNOLOGY COMPANIES GROWING MORE COMPLEX

In recent years, technology has transformed the way we do business, share information, and connect with one another. CMT companies are at the forefront of this revolution, and on the front lines of the new risk landscape it has created.

US organizations are on track to invest just over $230 billion in the Internet of Things (IoT) in 2016, growing to $370 billion by 2018, according to International Data Corp. This new world of connected devices promises convenience to customers and a treasure trove of insights on which companies can base strategic decisions. Businesses are better positioned than at any time in history to know their customers.

But the ability to obtain more information brings the responsibility to use that data appropriately, maintain customers' privacy, and practice effective cybersecurity. Some of the risks of hyperconnectivity were made clear in October 2016 when hackers used millions of connected devices to launch a large-scale attack on a key provider of the internet backbone. It's no wonder that the 2017 CMT study shows data and privacy to be respondents' top risk concern.

In 2016, we found that CMT risk professionals are generally most concerned with risks that are impacted by innovation and expanding business models. That includes cyber risk, but is certainly not limited to it. Our study also reflects concerns about the growing value of the sharing economy, those just-in-time services people increasingly value. From car services to home rentals to grocery delivery, the sharing economy raises questions about issues including liability, workers' compensation, and employment practices. New regulations that aim to ease the transition can have unintended consequences that make it harder to do business — no doubt part of why regulatory concerns is a top five risk among our respondents.

But what steps are companies taking to mitigate their risks? Are they building an effective risk transfer program? Consider that, despite ranking intellectual property as a top concern, only about one quarter of the companies surveyed reported buying IP insurance. Why? Answers ranged from: "It's too difficult to quantify," to "It doesn't provide enough coverage." But there are ways to address such issues. Risk assessment. Application of data analytics. Education about risk concepts. Effective execution of risk management strategies. As the CMT risk environment grows more complex, the role of risk professionals becomes increasingly vital.

TOP 10 RISKS FOR CMT COMPANIES IN 2016

We asked CMT risk professionals to identify the top risks for their companies.

1. Data security and privacy
2. Technology errors and omissions
3. Intellectual property
4. Employee safety
5. Regulatory compliance
6. Business interruption
7. Multinational exposure
8. Directors and officers liability
9. Mergers and acquisitions
10. Contingent business interruption

Note: Respondents were allowed to choose more than one risk.

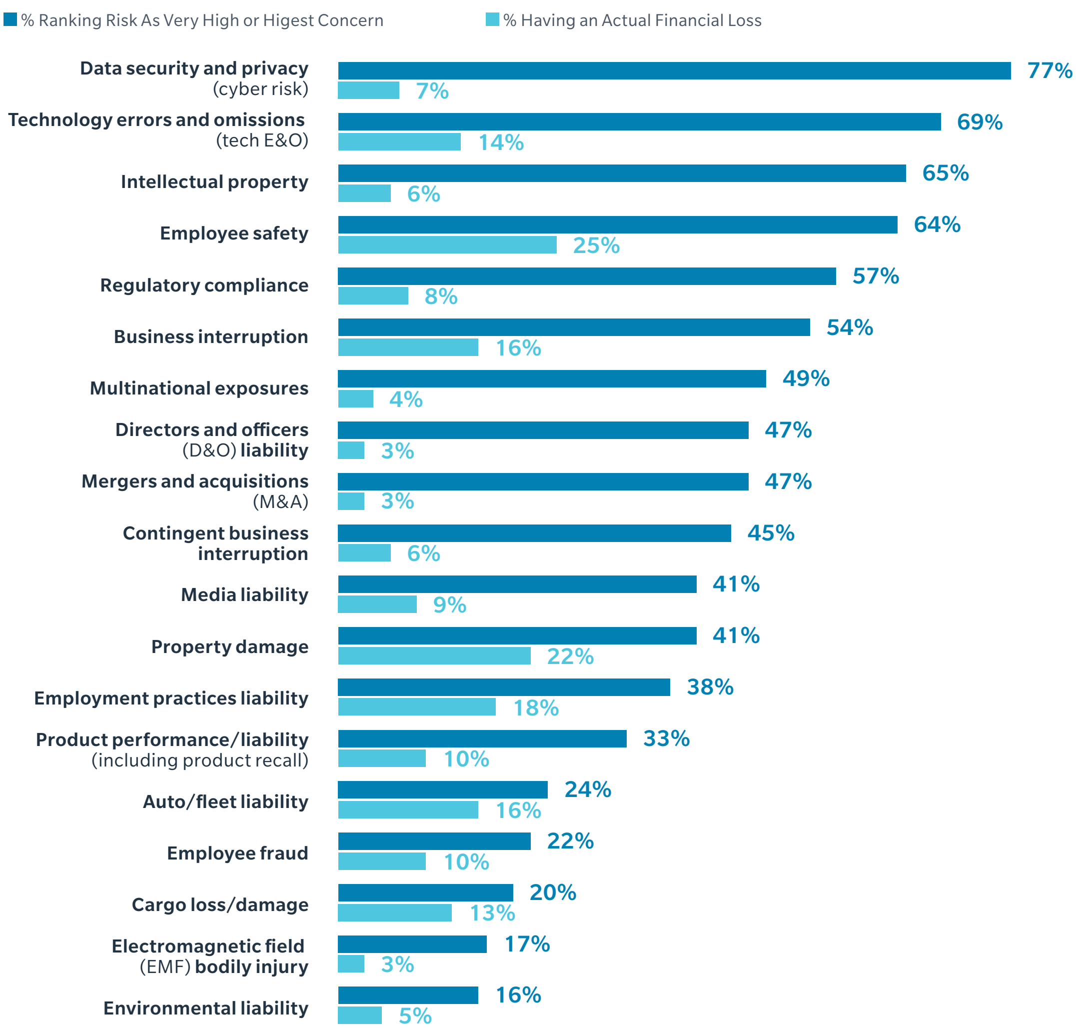
RISK SEVERITY

DESPITE THE LOW PROBABILITY OF SOME RISKS, POTENTIAL SEVERITY DRIVES CONCERN

A company can go years without its cybersecurity being breached, or having its intellectual property stolen. But one incident can bring a high cost in areas including compliance, lawsuits, lost business, and reputation. Potential financial severity is a key driver in how companies perceive their top risks. For example, compared to other losses, intellectual property theft does not often result in a loss for CMT companies; only 6% of survey respondents said they had experienced such a loss in the past few years. But the severity of such a loss, while difficult to quantify, is potentially enormous, helping put IP theft at the number three spot on the list of top CMT risks.

One interesting exception is the risk of employee safety, which ranked high as a top risk (number 5) and was also the highest in terms of reported losses. The high level of concern points to an understandable desire to keep people safe and an acknowledgment that workplace injuries can lead to significant settlements.

RISKS OF LOW-FREQUENCY AND HIGH-SEVERITY



RISK MITIGATION

FEWER THAN HALF ARE CONFIDENT IN THEIR MITIGATION AGAINST TOP RISKS

For seven of the top 10 risk issues identified in this year's survey, CMT companies face a gap between identifying the risk and mitigating it. For example, more than three quarters of respondents said cyber was a top concern, but only 36% said they believe it is mostly or completely mitigated. It's worth noting that four of the top five risks (all but employee safety) can be seen as related to emerging technology, such as providing software as a service, data hosting, and the sharing economy. These tend to be the most difficult to quantify and assess due to, among other things, contractual requirements with customers and vendors. Risks for which companies had a high level of confidence in their mitigation programs tended to be more "traditional," such as those related to property, auto liability, D&O, and cargo loss.

69%

of companies said **tech E&O risk** was of great concern

yet only

45%

of companies believe they are fully protected against tech E&O risk.

57%

of companies said **regulatory risk** was of great concern

yet only

23%

of those companies believe they are adequately protected against regulatory risk.

77%

of companies said **cyber risk** was of great concern

yet only

36%

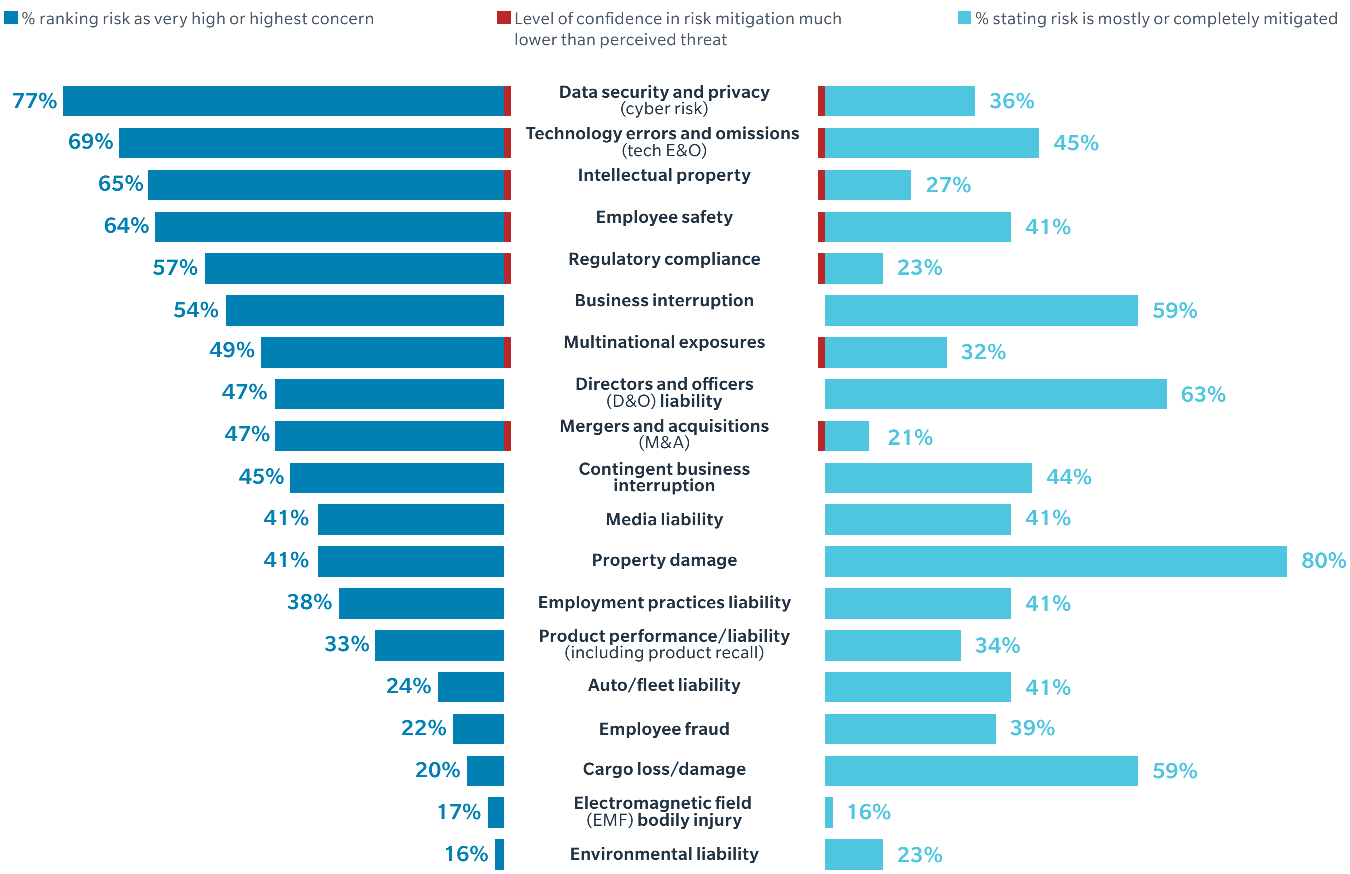
of those companies believe they are adequately protected against cyber risk.

RISK MITIGATION

GAP EXISTS BETWEEN RISK IDENTIFICATION AND MITIGATION

How concerned are you with the following risks to your business?

To what extent do your current risk programs mitigate the risk?



A CLOSER LOOK: INTELLECTUAL PROPERTY

COMPANIES MAY BE OVERLOOKING RISK TRANSFER OPTIONS FOR ONE OF THEIR MOST VALUABLE ASSETS

Respondents showed little confidence in their ability to mitigate intellectual property (IP) risk through either risk management strategy or specific insurance coverage. IP ranks third on the list of risks, yet only 27% of CMT risk professionals say they have mostly or completely mitigated it. And only 26% said they buy standalone IP insurance or have other coverage for the risk. Among the 74% that don't buy IP insurance, common reasons included that the risk is too difficult to quantify, the coverage is too expensive, and available insurance does not provide enough coverage.

Among CMT risk professionals:

65%

ranked **intellectual property** as a high concern — third highest ranking overall

yet only

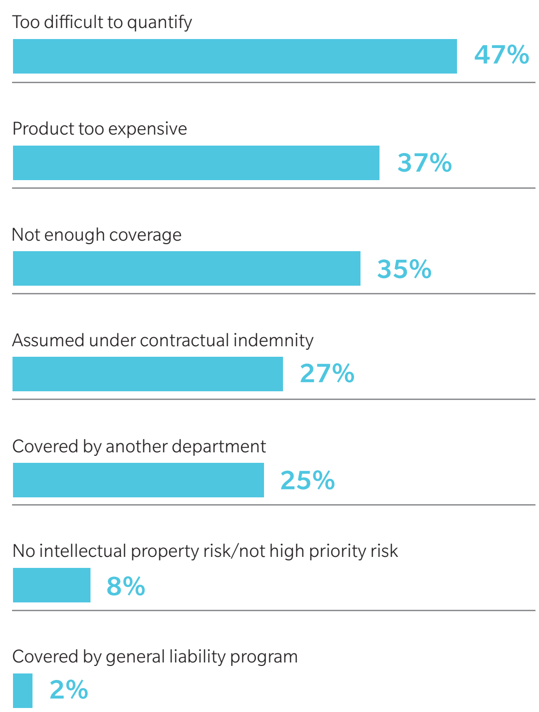
26%

of companies buy **standalone IP insurance** or have other coverage for the risk.

INTELLECTUAL PROPERTY RISK DEEMED TOO DIFFICULT TO QUANTIFY; CONCERNS WITH AVAILABLE COVERAGE

Despite the reasons given for not buying IP coverage, CMT companies need to address the risk. Consider that about $3 billion was spent on patent litigation alone in 2014. Among the questions risk professionals should be asking when it comes to IP risk management:

- Do we have potentially catastrophic IP risk?
- Can we reduce litigation exposures and costs?
- How do we take IP issues into account when designing new technology and developing our own patents?
- How can we prevent liability when bringing on new hires?
- How do we identify new IP risks?
- Who is ultimately responsible for IP risk in our organization?



A CLOSER LOOK: CONTRACTUAL RISK

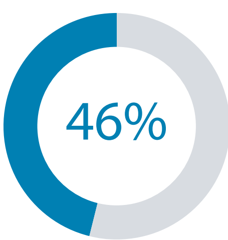
CONTRACTUAL DEMANDS PLAY STRONG ROLE IN INSURANCE PROGRAM DESIGN

The top two risks cited by CMT companies — data security/privacy and technology E&O — are greatly influenced by the contractual demands of customers. More than 40% of risk professionals noted that contractual demands have a very high or the highest impact on the design of their insurance programs. Contractual risks are growing as evidenced by nearly half of respondents saying that customers are requesting increased limits of liability. Few respondents say they have standard limits of liability in their contracts — more than half say their limits of liability vary.

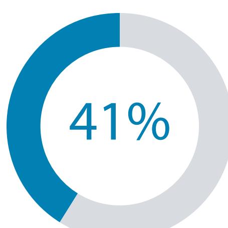
48%

of respondents said customers were asking for higher limits of liability in their contracts with CMT companies.

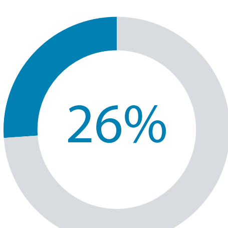
When asked which insurance program designs were **most affected by contractual demands**:



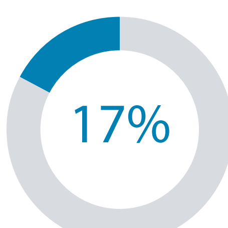
of companies said technology E&O.



of companies said cyber liability.

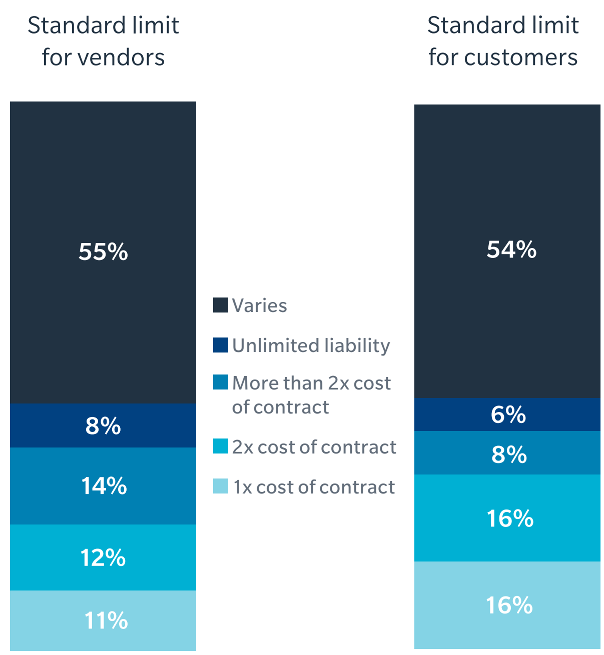


of companies said general liability.



of companies said workers' compensation.

The majority of contracts with vendors and customers tend to have variable **limits of liability** as opposed to being directly tied to the value of the contract.



VALUE OF RISK MANAGEMENT

RISK MANAGEMENT IS VALUED ON ITS ABILITY TO PROVIDE PROTECTION

Respondents to the 2015 survey said the value of risk management is in its ability to protect a company. This year's survey showed that the building pressure from customers and budgetary demands is truly driving insurance program design. It will be critical for CMT risk professionals moving forward to demonstrate how risk mitigation strategies can add value to an organization beyond the purchase of insurance policies.

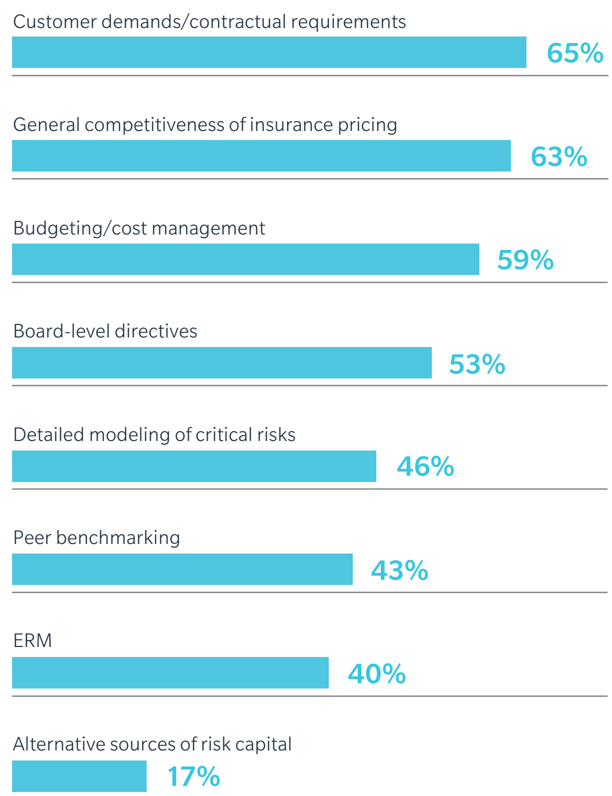
What is the value of risk management?

- Protect capital.
- Protect human capital.
- Protect management.
- Protect brand and reputation.

CUSTOMER DEMANDS, CONTRACTUAL REQUIREMENTS AND BUDGETS HAVE THE GREATEST IMPACT ON INSURANCE PROGRAM DESIGN

It is no surprise that more than two-thirds of CMT risk professionals view customer demands as "very important" or "most important" when designing a risk transfer program. But look at the next three factors — competitiveness of pricing, budgeting/cost management, and board-level directives. This means that the real potential of a risk mitigation strategy may not be realized — something risk professionals recognize, and see opportunity to change.

KEY FACTORS INFLUENCING INSURANCE PROGRAMS



Respondents were allowed multiple choices. Above combines respondents choices for "very important" and "most important."

ADDING VALUE TO YOUR ORGANIZATION

RECOMMENDATIONS

Commit to risk assessment.

- ► Engage in frequent review of current and emerging risks.
- ► When rolling out new products, ask if they bring new or nontraditional risks.
- ► Determine what processes are in place to assess risk exposures in fluid areas like cyber risk, technology errors and omissions, and contingent business interruption.

Apply data to decision making.

- ► Understand your company's approach to quantifying critical risks or loss scenarios.
- ► Calculate your company's risk bearing capacity and view on the cost of risk capital.
- ► Determine the price at which it makes sense for your company to retain, versus transfer, selected risks.

Engage and educate.

- ► Establish a plan to educate and involve colleagues in risk discussions.
- ► Understand how your company engages risk management in the product development and/or sales process.
- ► Ensure you have a plan to engage senior leadership, board members, and shareholders in discussing risk priorities.

Foster excellence in execution.

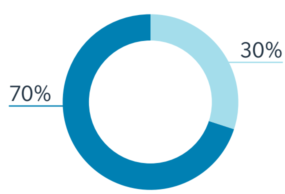
- ► Identify the top priorities given to your risk management team by executive leadership.
- ► Understand the day-to-day demands on your team, and which are deemed to be critical by key stakeholders.
- ► Determine an effective balance between capital and asset protection on one hand and near-term budget and cash-flow management on the other.

SURVEY DEMOGRAPHICS

APPENDIX

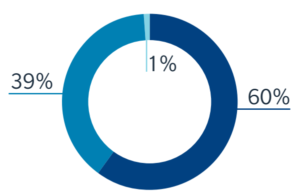
Our 120 survey respondents come from a variety of job functions. Some have full-time risk management responsibilities, such as risk managers or directors of insurance. Others have job functions with only part-time risk management responsibilities, such as treasurers, CFOs, or general counsels. Like many companies across the CMT industries, the respondents frequently worked for companies that have a blend of exposures from all three sectors. The companies also varied in size, ownership, and geographic exposures.

Job Function



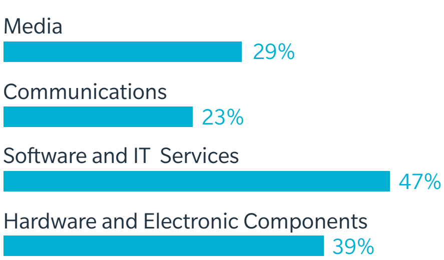
- Full-time risk managers
- Respondents with part-time risk responsibilities

Type of Company



- Public
- Private
- Nonprofit

Sector*

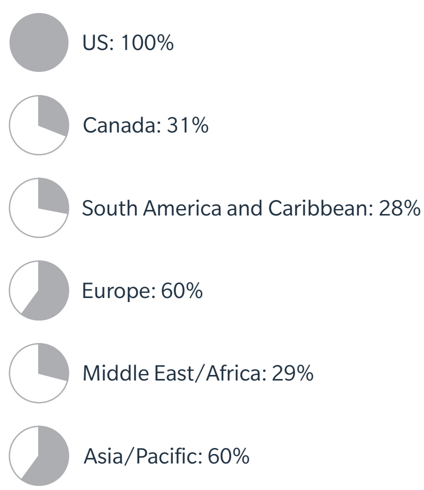


*Respondents could select multiple sectors.
27% of respondents selected more than one sector.

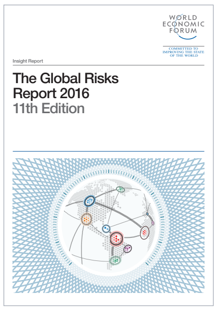
Revenue

Less than $50M	11%
50-100M	6%
100-250M	6%
250-500M	5%
500-1B	14%
1B-4.9B	28%
5B+	31%

Where are respondents risks?



This survey and report are part of the thought leadership that Marsh's CMT Industry Practice produces each year, which includes research, insights, events, and occasional commentary on current items of interest to our clients.



Marsh's CMT Practice also hosts several national events throughout the year, which in 2017 are expected to include:

- CMT Risk Roundtable at RIMS Annual Conference.
- Government Contracting Risk Forum.
- Silicon Valley Technology Risk Forum.
- Media Client Council.
- Quarterly webinars.

For more information, visit the CMT homepage on Marsh.com, or contact your local Marsh representative.

About CMT

Marsh's Communications, Media and Technology Practice serves more than 2000 clients and places more than $2 billion in premium globally. Our global reach includes centers of excellence throughout the U.S., Europe, the Middle East and Asia-Pacific. Our global client list includes 7 of the 10 largest communications companies, 8 of the 10 largest media companies, and 9 of the 10 largest technology companies. While we are fortunate to work with deep risk management teams in most all of our larger clients, the core of our business is serving the needs of the 85% of our clients for whom risk management is a part-time job and only one of many competing priorities.

MARSH

For more information, visit the CMT homepage on Marsh.com, or contact your local Marsh representative.

About Marsh

Marsh is a global leader in insurance broking and risk management. Marsh helps clients succeed by defining, designing, and delivering innovative industry-specific solutions that help them effectively manage risk. Marsh's approximately 30,000 colleagues work together to serve clients in more than 130 countries. Marsh is a wholly owned subsidiary of Marsh & McLennan Companies (NYSE: MMC), a global professional services firm offering clients advice and solutions in the areas of risk, strategy, and people. With annual revenue of US$13 billion and approximately 60,000 colleagues worldwide, Marsh & McLennan Companies is also the parent company of Guy Carpenter, a leader in providing risk and reinsurance intermediary services; Mercer, a leader in talent, health, retirement, and investment consulting; and Oliver Wyman, a leader in management consulting. Follow Marsh on Twitter, @MarshGlobal; LinkedIn; Facebook; and YouTube.