CRO RISK FORUM

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Reactions
The financial magazine for the global insurance market

ZURICH

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Welcome

Zurich is pleased to be sponsoring the second CRO Risk Forum of 2010. We hope you find this collection of important and contemporary risk topics as stimulating and thought provoking as the first issue published in the spring. The document you are reading now is a direct result of the enthusiastic reception of the first CRO Risk Forum, the response to which demonstrated that a serious exploration of the many evolving and emerging risks our organisations face is high on the agendas of senior leaders at forward-looking companies.

Ironically, just as the first CRO Risk Forum was being released in April, the eruption of the now-infamous Icelandic volcano and resulting ash cloud shut down transatlantic and domestic European air travel. Overnight, the disruption placed significant stress on the transportation of people, goods and materials vital to business and industry across Northern Europe and on both sides of the Atlantic. Air travellers found themselves stranded. American factories of European companies, including one major automaker, faced shortened shifts or potential shutdowns. Air shipments of fresh fruits and vegetables to European markets were temporarily halted. Business losses ultimately ran into the billions, all without a single, physical property loss associated with the triggering event on either side of the Atlantic – or even in Iceland.

The event was a reminder that, despite the best laid financial, operational and strategic plans, risk does not follow a schedule, respects no plan and can burst onto the scene with profound consequences at the most inopportune moments. It can come in the form of commonplace but costly events such as fires, windstorms or earthquakes. It may sneak up on us in the form of political unrest, regulatory overreach or the unanticipated failure of key sources of vital parts, supplies and materials. It can erupt from global, financial meltdowns or, yes, exploding volcanoes.

The interconnected nature of global risks and an increasingly complex risk continuum make it clear that Chief Risk Officers and other senior leaders with risk oversight responsibility will continue to be challenged to broaden their understanding of risks and the impact these risks have on organisations. The stakes are high and getting higher every day.

Once again, I recommend that readers obtain the World Economic Forum's report, *Global Risks 2010*. This document, which is available for download with other WEF publications at the organisation's Web site (www.weforum.org), emphasises the need to view global risk in an integrated manner so that potentially systemic threats can be more effectively identified, understood and mitigated.

We hope you find this special publication to be a useful resource in helping to shape how you think about risk in a changing world.

Michael Kerner
Chief Executive Officer
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CONTENTS

CRO
RISK FORUM

11

6

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Call for action

Climate change is no cause for panic, says Munich Re CRO JOACHIM OECHSLIN. But we do need to recognise the risks it poses

The risk that climate change poses for the insurance industry was first defined in a position paper published by the Emerging Risk Initiative, in which Munich Re is closely involved. Today, four years later, we find that our analyses and predictions from that time are increasingly being confirmed: global warming is indeed becoming one of the greatest challenges of the 21st century for the insurance industry, even if the relevant causes and correlations are still far from adequately researched.

The Intergovernmental Panel on Climate Change (IPCC), a body commissioned by the United Nations to correlate and compile the world's present scientific knowledge in this area, published its fourth assessment report in 2007. While the report did contain some irritating errors regarding details, which were quickly exaggerated by the media in the context of the Copenhagen Conference (and still serve opponents of international climate policy as welcome arguments) the current state of knowledge leaves no doubt about anthropogenic climate change:

- Global warming is taking place now. In the past 100 years, the average temperature has risen by 0.7°C around the globe, by 1.1°C in Germany and by 1.5°C in the Alps (linear trends);
- As a result of climate change, sea surface temperatures in areas known to give rise to tropical storms have already increased by about 0.5°C, which in some ocean basins is already affecting the intensity of tropical cyclones;
- The primary cause of global warming is the rise in the CO_2 concentration in the atmosphere. Compared to the pre-industrial era, the atmospheric concentration of CO_2 has increased by 36%, that of nitrous oxide (N_2O) by 18% and that of methane (CH_4) by 148%. The molecules of these gases absorb heat coming from the earth's surface and radiate it in every direction. The portion reflected back toward the earth produces a (natural) greenhouse effect which, thanks to its net effect of about +32°C of warming, has long been responsible for making life on earth possible. Without this effect, the mean global temperature would be roughly -18°C, instead of +14°C. Over the last century, the additional greenhouse gases produced since the beginning of the industrial era (additional anthropogenic greenhouse effect) have caused the global mean annual temperature at ground level to rise by 0.74°C.

Global warming since the beginning of industrialisation (1750) is attributable for the most part to anthropogenic emissions of greenhouse gases and only slightly to natural factors (such as the intensity of solar radiation).

Many scientific studies are yielding strong evidence that global climate change is already affecting the frequency and intensity of extreme weather events. This applies particularly to torrential rainstorms, heat waves, droughts and more severe cyclones in a number of ocean basins. The heightened level of hurricane activity in the North Atlantic that started in the mid-Nineties and is still continuing today, on the other hand, is attributable primarily to a long-term, natural climate fluctuation that has a periodicity of several decades.

Munich Re has been studying the consequences of climate change for more than three decades. To analyse the associated risks, we have put together the world's most comprehensive database on natural catastrophes. It documents all relatively severe events since 1950, as well as the effects of natural catastrophes on individual national economies, the insurance industry and the populace. Based on our data, we have discerned three trends:

- The number of weather-related natural catastrophes per year is increasing markedly – in contrast to the number of geophysically caused natural catastrophes;
- The amount of insured losses per year is rising substantially;
- Total economic losses per year are also mounting rapidly.

These three trends are attributable primarily to socio-economic effects (population growth, more concentrated settlement, higher values, settlement of zones exposed to heightened hazards), but are also due in part to the improved availability of information on events in remote areas. However, there is a good deal of evidence indicating that the various increases in the annual rates of weather-related and geophysically caused events also have to do with climate change.

If both these trends were attributable exclusively to socio-demographic causes, the rates of increase in weather-related and geophysically caused events would have to be more similar. Substantially more research is needed in this area, however, and Munich Re is currently conducting several projects, some with external partners, to analyse the impact of climate change on trends in natural catastrophe losses.

One focus of these efforts is to determine regional differences in loss trends. In some cases, it is not yet possible to quantify the impact of climate change on specific regions and/or extreme weather events due to inadequate data. However, there are initial indications that events associated with severe thunderstorms, for example, hail, cloudbursts and other severe weather phenomena are also on the rise in specific regions (for example, east of the Rocky Mountains in the USA, southwest Germany and Switzerland).

Rising trends are also being observed in the intensity of the most severe typhoons in many basins, torrential downpours and flooding in various regions, and heat waves and droughts in, for example, the Mediterranean region, southwest and southeast Australia and southern Africa. It is still too early, however, to draw any definite conclusions that will ultimately be incorporated into our models for premium calculation. For conclusions such as these, we need not only our own studies, but also greater transparency in third-party models and better data generally.

This also applies to the development of innovative insurance solutions that can help the people affected to protect themselves against the consequences of climate change and to adapt to altered environmental conditions.

With a view to climate change, Munich Re has also developed a number of new covers that reduce risks especially for investors in renewable energies and thus help to make such investments at all possible. For example, the first performance warranty cover for photovoltaic modules provides operators and investors with greater planning certainty. This policy guarantees that modules will perform to at least 90% of their rated capacity over the first ten years and to at least 80% over the subsequent 15 years.

Munich Re also offers cover concepts for the construction and operation of offshore wind farms, as well as covers for buyers and sellers of emissions credits against the risk that a "clean development mechanism" (CDM) project fails to produce the agreed emissions credits. At present, China is investing the greatest amounts in such CDM projects. Munich Re is the market leader for covers designed to protect projects in the renewable energies sphere, for example, when projects suffer setbacks or damage as a result of technical errors or natural catastrophes in any phase (design, construction, transport or operation).

Also, our expertise in catastrophe bonds ("cat bonds") allows our clients to transfer their natural catastrophe risks to the capital market. Munich Re is also investing substantially in a diversified portfolio of renewable energies and in 2009 initiated, together with the Desertec Foundation, the world's largest renewable energy project to date, which has the goal of producing electricity in the deserts of northern Africa to supply power both for local markets and for Europe.

Climate change and climate-protection measures also call for innovative solutions from the insurance industry in entirely new fields of business.

These opportunities for new products and investments show that, from an insurance perspective, climate change is no cause for panic. While we expect significant effects on losses over the coming decades, the consequences of climate change will emerge gradually, so that we consider climate change to be a well calculable risk, which, as the underlying data improve, will increasingly be taken into account in loss models and ultimately in premiums.

The right stuff

Arnout van der Veer, MIRM, is chief risk officer of information group Reed Elsevier* and was recently made European Risk Manager of the Year. Here he tells *CRO Risk Forum* what makes – and shapes – a CRO

What's your own background?
Prior to joining Reed Elsevier I was partner with KPMG in Amsterdam and New York. I joined Reed Elsevier in 2001 and was manager of internal audit for six years before taking up the newly created role of CRO. There isn't yet a typical career path for a CRO – reflecting the relative immaturity of the profession. But I do expect it to mature over time.

There are not too many CROs in the UK yet, outside the financial services sector, and that's something I would expect to change over time: risk management will only rise in terms of its understanding and importance. There is a learning curve for corporations to understand what the role adds to existing management processes. It is a role more common in the US and growing more so in Europe.

What qualities does a CRO need? And where should a CRO be positioned to make the best of those qualities?
Any CRO needs to have some fundamental qualities: you need to be strategic, operational and engaging at all levels in an organisation. Your ability to influence people – and this includes senior management and boards – will make the difference between the success or failure of a risk role.

[At Elsevier] I have a reporting line to the board and to the CFO of our company. It is crucial for a risk role to be properly governed allowing an independent perspective and at the same time having access to board.

Reed Elsevier is a truly 21st century information business: is its risk profile well defined?
Reed Elsevier has changed significantly, with the company transformed from being a traditional print company into an internet company that provides information solutions and also data broking services. The company's risk profile has changed as a result and that was the reason for creating the CRO position.

Operating in such dynamic environment, my day to day agenda is always changing and always challenging.

What specific risks are you are concerned with, tangible and intangible?
Business continuity is an important risk because if we have a problem at one of our data centres that can impact us – but it is relatively easy to manage and we have disaster recovery plans in place.

In terms of intangible risks, as a publisher, the future of copyright [law] is important to us. Along with others in the industry we are actively involved in protecting our interests.

Our brand name is very important to us. Reed Elsevier is not a well known name but our businesses in individual markets are very powerful brands so we manage them with care.

Reed Elsevier's LexisNexis Risk Solutions assists businesses and government in managing risk through identity verification and risk evaluation. What about your own company's cyber risks?
Being an internet company, data security and data privacy is very important. We are regularly attacked by hackers. Our LexisNexis business handles sensitive data on individuals including social security numbers and criminal data which could be very attractive to cyber criminals. Also there are important compliance issues around data privacy regulations linked to that.

What risks keep you awake at night?
My biggest fear? My biggest fear is the unknown: the unlikely, high impact events. Look at what happened to BP [in the Gulf of Mexico]. We don't have exposures like that – but we are a big, complex, decentralised organisation and I have to be aware of the possible hidden exposures.

Have you implemented enterprise risk management in your organisation?
We do have an ERM system in place and I am continuously fine tuning and adjusting it. That's partly because we are always learning, people's expectations are always changing and so we adjust our approach to the needs of the businesses.

We do not really talk about ERM per se as ERM sounds too conceptual and anything that sounds too conceptual doesn't work in this company.

Risk is owned by the individual business units and we are clear on that. But if you want business people to manage risk and to give their attention to risk you have to talk to them about it in business language.

How do you achieve that?
When we were working on Sarbanes-Oxley compliance six years ago I deliberately made managers examine the financial reporting risks they faced and put proper controls in place. We did that rather than refer to "compliance strategy" or "COSO methodology" because that simply wouldn't fly with them. Business people like to talk in business language and if you do that, it works. But that doesn't mean we don't have an "ERM methodology" – I save that language for talking to my peers!

What about insurance? Is that in your purview?
Reed Elsevier has an insurance manager who manages insurable risk and that person reports into treasury. Obviously we have regular dialogue and a close partnership on certain specific issues. We work together on issues like business continuity planning and we've worked together in the past on embedding quality control in certain businesses, at a process level, to improve risk exposures and also to reduce necessary insurance coverage.

We talk about risk appetite together and changing business environments and how to deal with those things from an insurance perspective.

It works like this because I believe that in my role I should not be the owner of any specific business risk and strive to be as independent as possible. For that reason, apart from a few people in my own team, no-one reports into me. On the other hand my stakeholders are many. And my success depends on building trust between myself and key stakeholders, of which insurance is one.

The strategy teams are also important stakeholders, like the compliance functions. And, in terms of business sustainability, my relationship with the innovation teams is important.

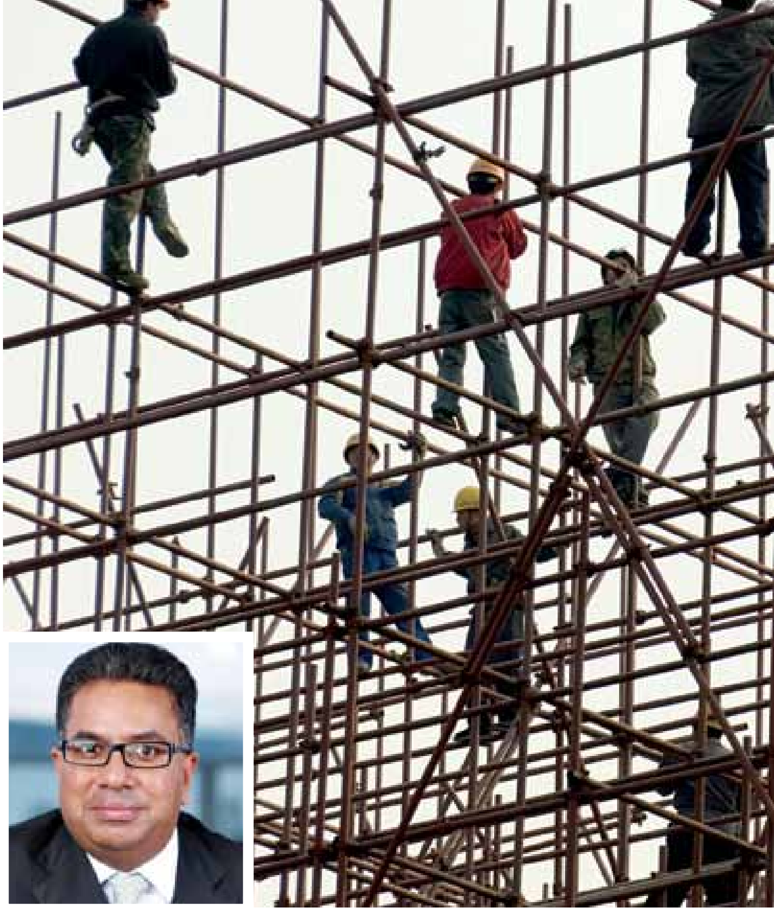
What's the key to succeeding as a CRO?
You need to be quite senior [to succeed] in this kind of role, to be able to influence and impact the key leaders in the organisation.

That's one of the problems the risk management profession faces – quite often the risk manager is a junior position in a company. They struggle to engage people in what they do and to get traction. That's not because they are not good people – it is because they are lacking seniority and proper governance.

What do you find is the most challenging aspect of the job?
It is a fascinating and challenging job. I am expected to be an expert in everything and that is a challenge! Obviously I can't be an expert in everything in a company that is global, decentralised and hugely complex. We run hundreds of different business models in hundreds of different markets. I have to be quite clear about what I can do and what I can't do and have a prioritised agenda, focusing on the most significant risks.

But in terms of career development for younger people it's a fascinating path and I have people supporting me as part of their career development programme at Reed Elsevier.

**Reed Elsevier is a world leading provider of professional information solutions in the Science, Medical, Legal, Risk and Business sectors. Elsevier is a global business headquartered in Amsterdam with principal operations in 17 cities around the world and has 6,800 employees. Total revenues for the year ended 31 December 2009 were £1,985m. Its shares are listed in London, Amsterdam and New York.*



More than a question of compliance

Solvency II could bring about a fundamental shift in risk management culture, Swiss Re CRO RAJ SINGH believes, presenting challenges for some insurers

The (re)insurance industry weathered the financial crisis quite well. While the value of companies' assets and share prices fell during the crisis, the industry has quickly restored its capital position. Even at its worst point, insurers and reinsurers were generally able to conduct their business as usual. Prices remained relatively stable, capacity was provided to clients as normal and claims were paid with the reliability that is expected of the industry. In contrast to the banking sector, there were only very few cases in which insurance companies required a government bail-out, and only then when bank-like activities had severely impacted an insurer's balance sheet.

One reason for this is that an insurer's business model is fundamentally different from that of a bank. The differences between the two became very apparent during the crisis, particularly with regard to liquidity risks. Insurers are pre-funded by premiums which are paid on conclusion of an insurance policy. This means they are not exposed to the same risk of "a run" as banks are. Insurers invest these premiums in such a way as to be able to pay anticipated claims, ie they match the assets that they hold against liabilities. As a result of the asset-liability matching (ALM) process, the losses shown by insurers and reinsurers in the crisis were, for the most part, unrealised losses, and it also explains why the (re) insurers weren't forced to sell off securities at a loss on a large scale during the crisis itself.

The resilience demonstrated by the insurance sector during the crisis resulted from the industry's particular approach to risk management. Unsurprisingly given the multitude of risks that an insurer faces in the course of a year, insurers know that the past is not necessarily a good indicator for the future. But that was how models in the banking industry were set up to work. The models themselves were not poor: Indeed the insurance industry has a great deal that it could learn from the sophistication of risk models used in the banking industry, as well as the availability and granularity of the data used to model specific risks. Compared to the banks, however, insurers are more used to "thinking the unthinkable", monitoring the landscape for new risks and using probabilistic scenario-thinking rather than deterministic calculations based on historical data. (Re)insurers approach modeling more from a scenario perspective, because they are looking for outlying or tail events, often where time series data is not available or statistically stable. Instead of judging potential future outcomes based purely on past experience, the scenario approach shifts the focus from "will this future event occur?" to "if this future event occurred, what would the outcome be?" Therefore, some (re)insurers rely more on the conservative Tail VaR (or shortfall) risk measure than the VaR measure commonly used in the banking sector.

Although the (re)insurance industry fared well through the crisis, many insurance companies are looking for ways to enhance their models and governance frameworks with the aim of strengthening the risk culture in their organisation. Europe's forthcoming insurance and reinsurance industry regulatory framework – Solvency II – provides incentives for sound risk and capital management and will give insurers and supervisors better tools to avert future financial crises. A principle-based approach to determining the capital requirements that a (re)insurance company needs to fulfill, the new regulatory regime will bring a better understanding of risk and therefore provide better protection and transparency for policyholders and shareholders respectively. It is important to note that the economic, all-risk view of Solvency II will require important investment into data granularity and quality, as well as corresponding IT systems infrastructure.

Solvency II will also bring about the introduction of an integrated risk model. Through this process, the assets as well as liabilities of an insurance company will be valued consistently with market conditions, risks will be quantified and checked for correlations and concentration. Insurance companies will have to check whether their solvency capital can cover expected claims as well as possible unexpected large losses. Under the old regime companies would simply assess separate risks in individual business lines without gaining a consolidated view of the situation, meaning that inter-dependencies and the accumulation of different risks might have been underestimated. There is no correlation, for instance, between a hurricane in Florida and an earthquake in Japan. It is not to be expected that these incidents would happen at the same time. There is also no connection between the two losses. As a result, there is a diversification effect, which lowers the cost of taking on these risks and improves capital efficiency. The Solvency I directive that is in place now does not reflect these diversification effects, which are particularly relevant for reinsurance companies. Solvency II, on the other hand, moves beyond improving capital efficiency and seeks also to correctly assess risks by identifying dependencies between business lines. A natural catastrophe like a huge flood can create claims in many different departments: property insurance, casualty insurance and life insurance.

Solvency II will also lead to changes in the way that risks are managed. Today it is often the compliance or finance department who are in charge of fulfilling solvency requirements. While they clearly have an important role to play under Solvency II, these departments are not engaged in analysing insurance and financial market risks. Solvency II requests that all experts work together cross-functionally to generate an integrated risk model capable of giving a deeper and broader insight into the risks that have been taken on by a company. This integrated, economic approach to the balance sheet can serve as an integral, risk-based steering instrument for corporate economic steering. And brings the different view – that of regulators, rating agencies and the internal view – closer together.

The cornerstones of an integrated approach to assessing and controlling risks are risk and capital modelling, risk governance frameworks and the extension of risk transparency and disclosure. These three pillars mirror the three pillars of Solvency II which covers demonstrating adequate financial resources, demonstrating adequate governance systems and ensuring that the level of risks within a company have been appropriately disclosed.

Inevitably with such a detailed and technical undertaking, much of the focus so far with Solvency II has been on the first pillar, or the quantitative aspects that will determine the capital requirements for insurers and reinsurers. The areas in which many of the challenges for European insurers lie, however, is likely to be pillars two and three, where the qualitative and cultural aspects of risk management are dealt with. Insurance companies clearly need to continuously update and improve their models to retain their effectiveness. But it should be recognised that under Solvency II there is also a need for senior managers to truly understand the risks that a company is undertaking: They must therefore recognise the limitations of the models used in the company and remain aware of these limitations as they make decisions about

THREE PILLARS OF RISK MANAGEMENT

Quantitative risk management	Risk governance	Risk disclosure
• Sound valuation and risk measurement • Quantitative risk limit monitoring system • Reliable capital adequacy framework	• Clearly defined responsibilities for risk taking and risk management • Sound, documented – risk management policies – operating, reporting, limit monitoring, and control procedures • Regulatory compliance • Internal and external audits of processes and figures	• Financial and risk disclosure, including information on tail risk and scenarios • Company risk culture • Peer reviews

Source: Swiss Re

when to use them and when to rely more on judgement. The development and use of models becomes a matter for internal governance, in which stakeholders such as the executive management or the Board will become more involved. The governance structure in place within a company will need to ensure that risk models are designed and calibrated independently of the risk-taking function, that they are subject to independent expert review and that the processes used within the firm are subject to adequate control to ensure the models are applied correctly.

Disclosure of an organisation's risks to key internal and external stakeholders is increasingly seen as a major factor in establishing corporate credibility. Solvency II explicitly calls for transparency in Pillar III, underscoring the importance of this quality in risk management. It is a non-negotiable element of the entire risk management process and, it could be argued, a major driver of the successful implementation of quantitative risk management and risk governance. Providing information to stakeholders inside and outside the company provides the basis for independent validation and peer review of results. Of course, it also exposes weaknesses and opens up the potential for challenge, but this is the price to be paid for creating trust between stakeholders, where material issues can be discussed in a practical, solution-orientated fashion.

Solvency II will therefore drive fundamental changes in the way that risks are managed within European insurance and reinsurance companies. Of course, it is important that the calibration process happening through so-called quantitative impact studies (QIS) remains true to the original principles of Solvency II.

The industry is concerned that the Solvency II Directive is departing from its economic- based framework as supervisors are developing overly conservative implementing measures. But assuming that the original intentions of the new directive are upheld, then Solvency II has the capacity to be much more than just a compliance issue. Instead, it represents a fundamental shift in the culture of risk management that has prevailed in the industry until now. Insurance risk managers will be required to step up and play a role in creating a pro-active and pre-emptive culture of risk management within their organisations, enabling disciplined risk taking.

What will be required of the risk manager in this new environment is summarised in the 10 brief touchpoints listed below:

1. Manage reality not the model

Models are powerful, but simplified and imperfect reflections of reality. We need to understand the assumptions and avoid using them outside their domains of validity. The crisis has reaffirmed that models need continuous improvement to retain their effectiveness.

2. Models do not make decisions, people do

Decision-making remains the responsibility of individuals. Models should give input to set direction and structure a discussion on assumptions and unchallenged judgements.

3. Explore the tail

Financial institutions need to implement a comprehensive approach to risk management, covering all risks affecting capital and liquidity positions. Risk managers should use scenarios 'to think the unthinkable'. There is a tendency to underestimate the level of risk represented by rare events which have not occurred in recent history.

4. Pay attention to liquidity issues

In the context of the financial crisis, there are some significant differences between the banking and insurance industry business models.

5. Distinguish between roles and responsibilities

It is important who owns, takes and controls risks in the business and on specific transactions. The owner is ultimately the Executive Board of the organisation. The risk taker is the business executive or team responsible for an area of the business.

6. Understand the risk tolerance and appetite of the business

Individual risk managers and risk takers must understand the risk tolerance and appetite of the risk owner. In governance terms, risk tolerance criteria should be set by the Board based on an evaluation of the available capital and required liquidity.

7. Be clear on incentives

All company cultures contain implicit and explicit criteria for what success looks like. Of course, financial bonuses are vital, but they are not the only factor. For example, in some company cultures there is no glory to be had in walking away from a deal. It is a key responsibility of risk management to ensure that performance measurement reflects the risk/reward balance.

8. Have courage and use judgment

It is not enough for a risk manager to act as a recorder of events, documenting decisions and perhaps adding their comments in the margin for posterity. Instead they must seek to name "the elephant in the room", the unspoken issue that other participants are choosing out of politeness, or in respect of hierarchy, to ignore.

9. Urge transparency and openness to change

CROs consider a key quality they look for in their risk managers is the ability to translate between different business functions and ensure that issues are being discussed in a common language.

10. Be accountable

A key part of the role definition for the risk manager is detailing how the day-to-day risk control processes will work and how they will ensure their independence. One solution used at Swiss Re is a "three signature" approach to all major deals. This requires that large deals are signed off by underwriting, client management and risk management, again reinforcing the independent role of the risk manager and their capacity to influence the acceptance of a specific deal by the organisation.

Believing in black swans

Can businesses plan adequately for extreme, improbable events? JOHN SCOTT, CRO of Zurich Global Corporate, believes it is a challenge CROs must rise to

One of the 19th Century's memorable contributors to English literature, Charles Lutwidge Dodgson, best known by the pseudonym "Lewis Carroll," transported readers to worlds far removed from traditional, everyday experience. Carroll succeeded spectacularly in creating imaginative situations and fanciful characters that continue to compel readers around the world today.

Ironically, some of what Alice learned during her most celebrated foray into Wonderland may be of some relevance to the harsh realities navigated by Chief Risk Officers and other risk management professionals every day. During one interchange with The White Queen, Alice protests that "one can't believe impossible things," to which the Queen responds contrarily that she often believes six impossible things before breakfast each morning.

Perhaps this is good advice for CROs as we find ourselves increasingly challenged by a broadening continuum of potential calamities that can severely damage organisations in an increasingly complex and risky world.

Most of the insurable risks facing our organisations are the traditional exposures including such common concerns as fire, flood, windstorm, earthquake, product or public liability and others. All of these, whilst potentially serious, are relatively easy to understand, analyse, price and to plan various mitigation strategies to counter as they are well understood in terms of prior claims history. This is especially the case for high frequency lines of insurance business such as motor or employers' liability/workers' compensation. Even the traditionally non-insurable risks, which form the bulk of risk that most organisations face, such as business or strategic risks and/or some operational risks, are often amenable to analysis and can be mitigated by a variety of risk management techniques.

Occasionally, however, organisations may be faced with far more extreme and unanticipated risk scenarios that seem beyond everyday experience and the ability to easily understand and manage. These extreme, unusual and potentially existential risks appear to come from nowhere because they are often very low frequency, in the "tail" of a distribution of scenarios for that risk and beyond common human experience. They can abruptly challenge the resilience of economies, society and organisations in unexpected ways. Called “black swans”[1] for their unusual and distinctive characteristics, such macroeconomic, geopolitical, often regional or global events demand new levels of creativity and imagination to overcome the new dimensions of challenge they represent.

In the minds of many, the volcanic ash cloud that recently interrupted air travel over Europe and the Atlantic seemed to fit the definition of a black swan. Clearly, the event caught many people off guard and caused significant disruptions in air travel, commerce and supply chains. However, this was not a black swan event in that it was well understood and in some sense predictable in terms of its impacts. In geological and even human timescales, volcanoes erupt frequently, and their locations are well understood, focused predominantly on tectonic plate margins such as the Pacific’s famous “Ring of Fire” and along the mid-ocean ridges, such as the mid-Atlantic ridge which encompasses Iceland. What was unusual with the Eyjafjallajökull eruption was the nature of the ash cloud, the forecasting of its distribution in the atmosphere and its impact on aircraft engines. Fortunately the outcomes, although disruptive over a period of a few weeks, were operational rather than strategic in nature

One of the positive outcomes of the Icelandic eruption, if one is inclined to look for silver linings inside such a dark cloud, is that events like this may prompt people to give more serious consideration to scenarios that could indeed have far more consequential, strategic impacts.

Return of the Black Death?

Consider again the possibility of global pandemic. By every measure, the H1N1 virus met the definition of a true pandemic as determined by world health authorities, specifically in the scope and speed of transmission, the number of countries affected and the overall infection rates. And while there were fatalities as a result of H1N1, it was far less virulent than had been predicted. This fact was not lost on many people who unfortunately may now be somewhat less inclined to take the threat of an extreme, potentially lethal pandemic as seriously as is warranted.

No matter how improbable a replay of the medieval “Black Death” may seem from today’s vantage point of modern medical advancement, a worst-case scenario is still a distinct and unpleasant possibility. Someday, a virus with far greater ferocity than H1N1 may emerge. The strain on medical resources, government and social cohesion could be monumental. For many organisations, without an adequate plan to respond, the business interruption impacts of such a pandemic could be terminal.

From a CRO perspective, it is important to challenge our organisations with such extreme scenarios. It is not pleasant to think about, but in the case of an extreme pandemic many tens of thousands of people could succumb to a disease in any given country, and everyone living in that country would be affected in one way or another. They may have lost friends and relatives or became ill themselves. Even if free of disease, people would be too frightened to leave their homes to shop and go to work, or might well be forbidden to leave their homes under government order. There could be breakdowns in the delivery of food supplies and other necessities. Power and water might go down with no one willing to tend the systems. As a result, the social fabric could begin to unravel in relatively short order.

In these circumstances the entire commercial framework could be severely challenged or become completely dysfunctional. There would be no such thing as business as usual. Instead, the single trigger of a pandemic would create impacts with multiple outcomes. There would be a very real possibility that many organisations could themselves become casualties of the pandemic. That is a true black swan event, a game changer that could mean the difference between survival and failure for any business, depending on measures taken beforehand.

In actuarial terms this is often referred to as a cupola effect, where normally uncorrelated risks start to correlate in extreme events. This is usually seen in major natural catastrophe events, such as the flooding of New Orleans during hurricane Katrina. In that circumstance, insurable risks which are usually not correlated e.g. property damage and motor insurance started to correlate as the trigger, widespread flooding, created a wide range of impacts

Disasters du jour

The range of extreme challenges is not limited to communicable diseases or natural disasters. Many other scenarios could do spectacular mischief. Strategic and economic forecasting groups – professional Cassandras – spend significant time and energy considering what other kinds of black swan events might appear to bedevil corporations, governments and individuals. Some forecasting groups track several global political, social and economic risk scenarios on a daily basis, creating a dashboard view of how close the world happens to be to disaster at any given moment.

These scenarios can include such things as the potential for limited nuclear war between nuclear-armed states in the developing world, civil and economic unrest in China, armed conflict on the Korean Peninsula and other distressing potentialities. The chances of any scenarios coming to pass vary over time, and the hope is that most will remain in the “improbable” category. But should any one or combination of these or the many other scenarios posited by strategic forecasting firms become realities, the impacts on multinational and global organisations could be significant. No one can predict with certainty what will or will not occur, but clearly CROs need to be spending more time considering a much broader range of strategic, geopolitical factors when planning their risk management strategies for sustainable business models.

Some risks are either so infrequent in nature, or are genuinely new, that they fall into the category of emerging risks. For instance, while the pace of climate change continues to be debated in many scientific and political corners, the current consensus seems to be the changes will occur gradually over time. But what if large-scale, significant changes can happen much quicker than predicted? Who is to say that there may not be mechanisms underlying the planet's climate engine we have yet to fully understand. If "switched on" by human activities, might these factors drive catastrophic changes within a matter of years, not decades? How will organisations adapt, change and survive in such a scenario? Clearly, CROs and other risk assessment professionals should be doing a lot more work around the issue of climate change and its impacts on business resilience, prudently hoping for the best but planning for the worst.

Dangers from beyond

Even threats from beyond the atmosphere need to be on our radar screens. Consider the effects of a meteor strike like the 1908 Tunguska Event in Siberia. Whatever struck the Siberian wilderness that spring morning released energy equivalent to 10-15 megatons of high explosives, knocking down an estimated 80 million trees over 2,150 square kilometres or more than 800 square miles. Consider the effects should such an event occur near a major urban centre. Improbable, yes. Impossible, no.

While alternative energy adherents are emphasising the promise of solar power, emerging risk groups around the world are now giving serious attention to the potential impacts of the Sun's darker side – solar storms. These massive, electromagnetic events can overload and knock out electrical grids and most electronic devices across wide areas, potentially entire hemispheres.[2] Smaller disruptions have been documented on numerous occasions over the past century, but most occurred at times when our physical, commercial and social infrastructures were far less dependent on a global network of information technology that helps to control virtually every aspect of production, distribution and finance.

Imagine everything from electric power generation to communication, transportation, the Internet and the flow of financial data knocked out one summer's afternoon. Suddenly, you can't get money out of an ATM. You can't buy anything in a shop, even if it's possible for shops to open without power and computer resources, not to mention the ability to restock their inventories. What is absolutely clear is that you only need a day or two of that type of disruption and civil disorder begins to set in. We saw it in the aftermath of Hurricane Katrina in New Orleans. Imagine a complete breakdown of order across the Northeastern US in the wake of a solar storm-caused power and systems failure – not for days, but possibly for several weeks before getting things running again.

As a CRO, how do you prepare your organisation for such a contingency? Can it even be done?

In the light of such scenarios, it is important for CROs to challenge their organisations to consider and prepare for extremes, no matter how improbable they might appear in the light of day. Preparing for events that may never happen will also deliver the additional benefit of helping the organisation become better prepared to deal with less extreme but more likely events.

Imagining extreme risk

I see this as the one of the key values of the CRO role – to be imaginative and to bring together people from different disciplines to consider possibilities that may be outside of their ordinary experience. To break through company "groupthink" and to challenge supply chains and business resilience plans. And to bring customers and suppliers into the process to consider how all might interact to respond to an extreme crisis situation.

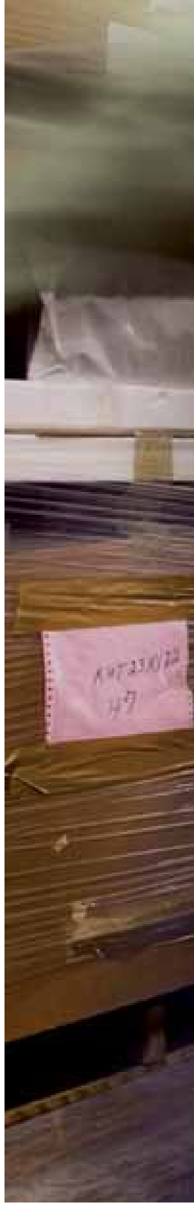
Being unafraid to consider mitigation strategies for truly extreme, outlier risks is only the beginning. CROs also need to emphasise the testing of any contingency plans and the training of team members to know what to do prior to, during and after an extreme event.

We've seen such dry runs in cities like London and New York, where local governments and businesses have coordinated business continuity tests to respond to major chemical, nuclear, biological or radiological (CNBR) terrorist attacks. Major companies collaborate by playing out scenarios to the point of recruiting people to act as casualties and explore the possibility that significant parts of the city may become exclusion zones in the aftermath of a major CNBR terrorist or other mass disruption disaster event. The simple reality is that during such an event, you can forget about how you are going to get your people into your local facility to retrieve laptops and files, or the simple continuity plans of most organisations, because you simply can't access the city, let alone your offices, perhaps for a very long time.

As risk management leaders we don't have to consider six impossible things before breakfast each morning to know the risks our businesses face are evolving in dramatic, often extreme directions. But "believing the impossible" may be just the kind of daydreaming every CRO should make some time for – before breakfast or after.

Footnotes:

1. *The Black Swan: The Impact of the Highly Improbable by Nassim Nicholas Taleb.*
2. *National Research Council: Severe Space Weather Events-Understanding Societal and Economic Impacts – Workshop Report: www.nap.edu/catalog.php?record_id=12507#toc.*



Chain reactions under control

LINDA CONRAD, Director, Strategic Business Risk, Zurich Services Corporation, explains why CROs should sharpen their focus on supply chain risk

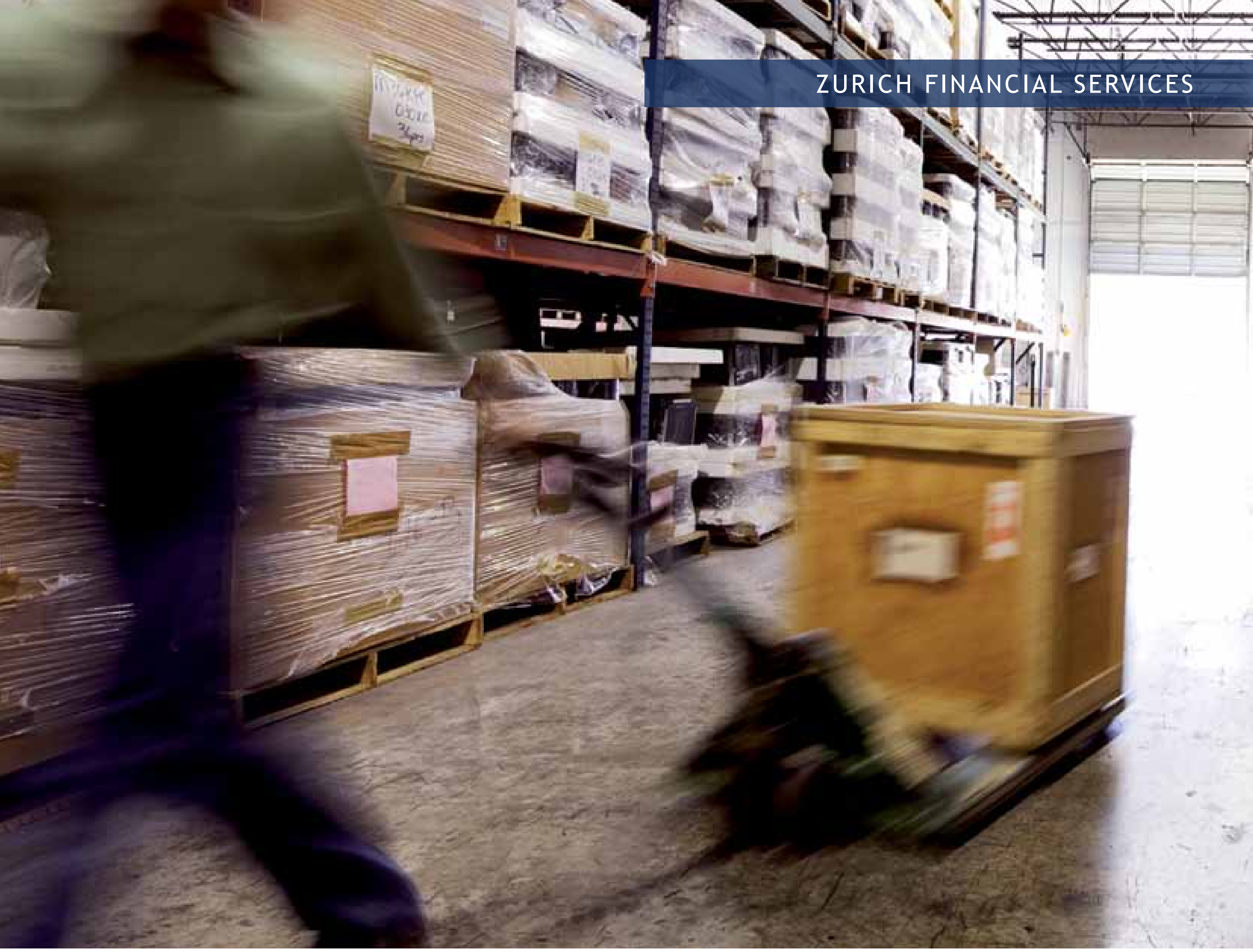
As businesses seek new ways to increase efficiencies and reduce costs, one area where obvious gains can be made is in procurement. As a result, procurement professionals are often tasked with finding ways to move their organisations away from maintaining expensive, standing inventories of materials and components to a just-in-time production environment of dramatically reduced stock, which can be replenished by external sources when needed. Savings can also be found by seeking well-priced deals with sole-source suppliers or trading partners in new geographic territories.

As companies try different strategies to drive costs out of their supply chains, they often unintentionally drive risk into the business. Procurement professionals are evaluated by their ability to maintain efficiency while engineering costs out of the supplier network. But these cost and process changes can often introduce additional risk back into organisations in the form of increased vulnerability to supply chain disruptions. And because smoothly running procurement functions tend to operate in “silos” outside the normal view of the Chief Risk Officer, the risks to profitability presented by supply chain disruptions may go unseen as well. This can be a costly mistake, because even a relatively short interruption in a vital resource or component necessary to production can quickly become a major business issue

Effective supply chain management is becoming an increasingly critical driver of profit… and potential loss. Nearly 850 CEOs reported that they did not achieve their financial targets due to supply chain disruptions in 2008. Historically, supply chain business interruptions cause roughly 10% lower sales and 11% higher costs, leading to an average 25% stock price decline when compared to industry peers. As much as 40% of businesses stricken by serious supply chain issues never recover.[1]

Vinod Singhal, professor of Operations Management at the College of Management, Georgia Institute of Technology, and Professor Yossi Sheffi, director of MIT’s Engineering Systems Division and the MIT Centre for Transportation and Logistics, have conducted extensive research into SEC reports of the stock performance of US companies. Their analysis is the source of the average 25% reduction in share price referenced above as a result of supply chain disruptions, a reduction that can last more than two years.

The Procurement Strategy Council, a global organ-



isation based in Washington DC, reported that supply chain disruptions alone cause individual businesses an average annual revenue loss of $8 million, while some of the hardest hit companies suffered losses topping $38 million.

In today's challenging business environment, when the cost of breaks in the supply chain can cascade across your business, active supply chain management can be an integral enterprise resilience tool. By defining the largest potential business interruption impacts and monitoring capital consumption, the CRO can assist the business in making better risk-based strategic decisions, and promote 360-degree business continuity and growth plans that protect profitability and optimise risk across the enterprise. Thus, it is essential for CROs to put supply chain risk management on their agendas and to better understand and mitigate this significant exposure to enterprise resilience and profitability.

Supply chain risk on the rise

Many factors can influence the integrity of supply chains. Statistics about on-time port arrivals illustrated that scheduled arrivals have reached historic lows, with only 46% of shipments arriving on time in 2007.[2] It is likely that this that has continued to deteriorate in some locations around the globe in the intervening years. Each day's delay means a supply chain disruption for someone. Not long ago, a shutdown of seaports on the US West Coast due to a dockworkers' strike caused, among other disruptions, a major automobile assembly plant to shut down while substitute parts were flown in.

The global financial crisis is an example of extreme events that have affected economies, companies and societies in recent years. Natural catastrophes have also taken their toll on supply chains, from hurricanes and typhoons to earthquakes and volcanic eruptions, with the Haitian and Chilean earthquakes, the recent ash clouds over Europe and the floods in China being among the most recent examples. In fact, there were about 400 supply chain disruptions publicised in the press following the volcano eruption. This unwanted media attention can damage corporate reputation by showing that companies were unprepared for contingencies and did not have robust continuity plans in place.

Geopolitical uncertainties yield additional supply chain risks. Some of the factors driving these changes include government embargoes, interference with suppliers, strikes and labour troubles, terrorism and sabotage. For several years, the Global Risk Network of the World Economic Forum (WEF) has produced widely quoted reports on existing and emerging global risks. I strongly recommend that anyone with interest or concerns about a broad range of emerging risks visit the WEF website at www.weforum.org for more information.

According to a 2008 research report on a survey of 110 risk managers conducted in concert with *Risk & Insurance* magazine, nearly three quarters of those polled indicated that their supply chain risk had increased since 2005. The magazine also reported that the number of countries with supply chain vulnerability increased from 38 to 53. Risks driving this change include government embargo and interference with a supplier, strikes, terrorism and sabotage. In addition, 71% reported that the financial impact of supply chain disruptions had also increased, damaging bottom lines, customer retention and brand equity.[3]

A 2009 survey conducted by the Business Continuity Institute showed 74% of respondents had sustained a supply chain disruption. Even more telling is that 88% of companies expected to experience a disruption in the coming year. Other major findings of the report concluded that supply chain risks are multiplying. The danger is that many businesses are under prepared and ill-equipped to deal with the growing risk of more disruptions expected in the future.[4]

Globalisation drives increased risk

Globalisation has created continual changes in the supply chain across all operational functions. Trends such as off-shoring, distributed manufacturing, global outsourcing and lean sourcing, among others, are creating complex, long supply chains with fragile links that can suddenly dissolve, producing disruptions of significant and lingering severity.

Supply chain risk is a universal exposure for every company, yet the specific scenarios of supply chain risk tend to be fundamentally unique to every organisation and demand a thorough evaluation in terms of their potential financial impact. The risk of particular varieties of supply chain disruption is embedded within a company's business model and is affected by strategic priorities, operating platforms and tactical decisions. By definition, supply chain risk arises from the organisation's need to procure raw or finished goods, the assembly of finished materials or products, the movement or storage of raw goods or finished products, as well as the selling or receiving of such goods or products.

Another important dimension in supply chain risk is the interdependency that may exist between businesses engaged in transactions such that activities, processes or challenges affecting one business will affect all the others. This ripple effect is known as contingent risk. The greater the degree of interdependency, the higher the risk of adverse consequences befalling all parties if an adverse event strikes just one of them.

When the chips were down…

Some real-world examples are striking and illustrative. In one case, a semiconductor plant producing chips for mobile phones caught fire due to a lightning strike. This caused major supply chain issues for two customers that happened to be major suppliers of mobile phone handsets. One company managed the supply chain disruption relatively well by virtue of a supply chain business continuity emergency plan that had been designed well in advance. However, the other manufacturer faced a major supply shortage that resulted in a loss of sales of at least $400 million, ultimately resulting in the restructuring of its entire mobile phone division.

In another case, a factory that was the sole supplier of brake parts for a major Japanese automobile manufacturer was destroyed. The production disruption immediately shut down the manufacturer's just-in-time supply chain, forcing 18 plants to close for nearly two weeks and resulting in a total loss of sales on the order of $325 million.

The common denominator in both cases was that none of the downstream manufacturers' facilities were damaged by the precipitating loss events. However, whether a supply chain disruption is caused by physical damage, such as windstorm or fire, or is precipitated by any of the limitless numbers of other disruptive events, from strikes and port shutdowns to terrorism or volcanic eruptions, the consequential losses can be massive. In truth, evaluating and responding to the potential challenges of supply chain disruptions is often less a case of prudent business resilience planning and more a matter of pure survival.

Peeling back the layers

There are many factors to be considered when assessing the strength and reliability of your global supply chain, which is why it is vitally important to undertake an evaluation of the entirety of your organisation's supply chain exposures. Indeed, a thorough supply chain assessment employing all necessary due-diligence practices may reveal some surprising interrelationships and correlations.

In one case, a manufacturer had been relying on a single supplier of a vital material, the interruption of which would immediately shut down production. The manufacturer's operations were so extensive that a cursory assessment found its demand accounted for fully 70% of the supplier's output. Prudently, the manufacturer decided to engage another supplier so that an interruption would not shut down operations. A subsequent reassessment of the manufacturer's supply chain found that the new, secondary supplier was actually obtaining virtually its entire inventory of the needed materials from the original supplier, acting

"Are any of your suppliers susceptible to unexpected, outlier risks such as piracy, port blockades, civil disorder or acts of war?"

Linda Conrad, Director, Strategic Business Risk, Zurich Services Corporation

as little more than a pass-through distributor. Hence, the net result of an outage at the primary supplier would have been the same.

All of which raises obvious questions which a CRO should address as part of his or her responsibility for managing enterprise risks. The essence of enterprise risk management (or ERM) is to put everything on the table – considering all risk to your enterprise to determine if there are key exposures lurking that need to be mitigated, or whether there are opportunities that should be capitalised upon! Thus, the CRO might be in an ideal position to verify if the company has assessed the potential financial and reputation effects of supply chain exposures. Is your business resilient to a disruption? Does it expose your brand? Have you considered the financial viability and business continuity plans of your suppliers? What are their dependencies on their own outsourced manufacturers? How much reliance do they place on original equipment manufacturers that may themselves be interrupted? Are any of your suppliers susceptible to unexpected, outlier risks such as piracy, port blockades, civil disorder or acts of war?

Your suppliers may themselves face global manufacturing and supply constraints, which may readily flow downstream to you. Increased product complexity and distributed information add to the risk, as do raw material or component availability. Finally, simple failures in transportation and physical damage to components in transit can be as disruptive to your production as any natural or man-made disasters.

Clearly, there are an infinite number of potential disruption scenarios, all of which will project a predictable set of outcomes. When a disruption occurs, the factor most predictive of your individual outcome is the degree of supply chain awareness and analysis of the vulnerabilities you have done prior to the event. Identify the areas within your supply chain that are the most vulnerable, and why. Quantify the financial impacts associated with individual disruptions associated with specific supplies or suppliers. Identify and prioritise the improvement and mitigation efforts applied to your supply chain risk management processes to protect your profitability should the chain break.

Continuity audits deliver value

Remember that a supply chain risk assessment is just one component of holistic and proactive business continuity planning. A fully developed continuity plan necessarily begins with an audit of all existing contingency and recovery plans to provide a broad, holistic view of where you stand and a firm basis for improvement. Audits must benchmark business continuity management against standards and best practices to yield a summary of the key performance gaps in the organisation's processes.

Functioning as "stress tests," business continuity reviews and exercises can help ensure that continuity plans are the right fit for their intended purposes, and have been updated to accurately reflect the current operating model. Audits will also help in determining the organisation's risk tolerance and risk appetite as well as making it easier to achieve compliance with existing and future regulations. The result should be increased enterprise resilience which can both prevent issues from emerging and protect profitability through more effective return to business.

Forewarned is forearmed

Importantly, business continuity audits will also deliver value in demonstrating competence and resilience to key stakeholders. In an intensely competitive business environment, a reliable, permanent market presence is essential to satisfy customers and achieve planned levels of revenue and profit. While an interrupting event can result in physical damage, it may present an even greater threat to the existence of the business due to a loss of confidence on the part of customers, investors and the marketplace at large.

Increasing supply chain resilience is a major component in the process of improving enterprise sustainability and business resilience. The fact that organisations only publish supply chain failures when they can no longer keep them private highlights the drastic rise in recorded events as merely the tip of the iceberg. The increase in both frequency and financial impact of supply chain disruptions should be an unmistakable warning to shrewd CROs and executives to act now to isolate and eliminate risk in their supply chains.

Footnotes:

1. *CPO Agenda: The Business Review for Supply Leaders; Winter 2008.*
2. *Logistics Today, May 27, 2007.*
3. *"Stemming the Rising Tide of Supply Chain Risks: How Risk Managers' Roles and Responsibilities are Changing," Marsh Research Report, April 15, 2008.*
4. *"Supply Chain Resilience Report 2009;" ©2009 The Business Continuity Institute; www.thebci.org.*

Which risks really matter?

What risks should be on the CRO radar when tying together quantitative and qualitative risk management? That's a hard question to answer, says EBERHARD MÜLLER, CRO at Hannover Re

The harmonisation and integration of quantitative and qualitative risk assessments in order to find out what really matters is the toughest part of Enterprise Risk Management in my opinion.

Why? Take this small example: as an international reinsurer you have quite extensive experience of casualty reserves and natural catastrophes. Facts and figures – such as development triangles and exposure data – are available for use in calculations. And you have empirical evidence showing that most past insolvencies were caused by reserving problems. Major catastrophe events rank second, i.e. another insurance risk realisation.

Nevertheless, there are also operational risks such as fraud, IT system failures or simple fire damage to office buildings that have to be considered within your ERM framework. But how much resource should be allocated to what task? Here you need to have a clear understanding of your holistic risk management view with some sort of uniform measurement basis.

Otherwise, you will end up in a situation similar to that of some regulators in the current Solvency II discussion: calling for huge volumes of information and tying up many, many resources for items that do not really matter.

The reason – as always – is a lack of understanding of the bottom-line importance of a particular risk and the lack of uniform risk metrics.

I have to admit that it is quite a challenging task to develop this uniform understanding of qualitative and quantitative aspects. What is more, this is a process that takes some time and cannot be accomplished overnight.

The best starting point is a solid foundation consisting of the quantifiable insurance risks. One of the most commonly used tools is a holistic model of the quantifiable risks (such as insurance risks, market risks, credit risks) and their correlations. Since these models facilitate Dynamic Financial Analysis, i.e. analysis of the impact that a change in input parameters might have on the overall results, they are referred to as DFA models.

The beauty of these models and their integrated view of different risk ingredients is that they make it possible to test the bottom-line impact of certain parameters. This can lead to surprising and at the same time convincing results. Another example: in an integrated assessment of life and non-life risks you may find that a 1,000-year pandemic with an excess mortality of three per mille will have a dramatic impact on the life portfolio on a stand-alone basis. Combining life and non-life, however, the bottom-line impact from this 1,000-year pandemic may only be a fraction of the impact on a stand-alone basis.

The reason is very simple: while a non-life portfolio involves numerous perils such as windstorms, earthquakes or flood events (each able to generate a 1,000-year event), there is only one significant catastrophe peril for the mortality risk: a worldwide pandemic. This event is dramatic for a life portfolio on

a stand-alone basis, while it is “just another” event in an integrated life and non-life portfolio.

The conclusion for your ERM is that, yes, pandemic is a severe risk – but do not overreact! Look at the bottom-line impact for your integrated portfolio and decide on the basis of this assessment what should be dealt with first.

By way of example, the conclusion for international reinsurers may be that non-life risks rank first and that within the non-life risks it might be the reserve risk for long-tail business that takes the no. 1 position. This finding is also backed by empirical evidence, since most reinsurer insolvencies in the past have been caused by insufficient reserves. The no. 2 risk might be the exposure risk, especially for natural catastrophes. Again, the empirical results may confirm this.

The market risk and credit (for outstanding reinsurance) risk may come in third and fourth, but this certainly depends on the asset allocation and retrocession strategy of the individual company.

Now we are coming to the tricky part: how are qualitative risks (such as operational risks) integrated into this holistic view?

And here is my first concern: while you may have tons of data available to estimate loss distributions and loss development triangles for insurance risks, there is a lack of meaningful data – especially for insurers – on the tail-end of the distribution of qualitative risk realisations.

Furthermore, market data – like the ORIC database – are only helpful to a very remote degree, given that the potential for operational losses to materialise does not depend on “random” realisations of certain “random variables” (e.g. earthquakes), but rather is heavily dependent on the existing structures and processes. The next link in the chain of thought is usually: ok – let’s take the existing structures and processes and try to estimate the potential for operational losses under those conditions.

Yet this is where the nightmare starts. Creative non-mathematicians celebrate their scenario-building abilities, usually starting with the words “Let’s assume that...” My personal example is the sentence: “Let’s assume the television tower close to our building comes down and falls directly onto our building”. The beauty of these scenarios is that everybody is able to picture them immediately. The misleading part is that you have a firm scenario in your mind which disregards any realistic assessment of occurrence probabilities! And all of a sudden you are lost as you try to combine the results for those scenarios with the results from your DFA model.

The only obvious way out of this trap is in fact an approach that starts with a justifiable market-wide average charge for operational risks, e.g. as a certain percentage of the previously quantified risks. In their 2004 paper the expert group of 20 international actuaries came to exactly this conclusion. [1]

The second step is to review the individual

systems and processes of an individual company in order to find out whether the situation is "above average" or "below average" and then to adjust the applicable factor accordingly.

As a rating agency, for example, I would use the "ERM" rating of my ERM review and make the following allocation: where there is no existing ERM assessment or in case of a "weak" result the capital charge might be 10% (i.e. an adjustment factor of 1.1 applied to the previously quantified risks). For an "adequate" result this charge may decrease to 7%, for "strong" to 4% and for "excellent" it may be as low as 1%.

As a regulator I might follow the Bermuda Monetary Authority (BMA) in their approach, requiring a self-assessment of the ERM system which results in certain scores for certain categories. A full score leads to a capital charge of as little as 1% whereas if you fall short of a minimum threshold with your individual scores you will be charged 10%. In between, a staggered charge applies in steps of 1% depending on the scores achieved. [2]

Yet even in cases where the full charge is applicable it is quite obvious for insurance companies that the predominant risks are still the insurance risks rather than qualitative risks. A further hurdle for quantification of qualitative risks such as operational risks is the fact that the majority of "loss realisations" from operational risks are to a certain extent already reflected within the insurance risk database. If underwriters exceeded their limits or failed to ask the right questions before writing a treaty and thereby caused excessive losses on occurrence of major catastrophes, such losses are already reflected in the loss database producing the probability distributions for insurance losses. This holds true for market data as well as for individual company data, and I have not met a single colleague in the market who was able to split his insurance loss database into the two components of "pure randomly caused losses" and "losses due to underwriting failures".

Whilst all this lends credence to my personal belief that many of the current discussions surrounding qualitative risks seem to put undue weight on them, I must admit to one circumstance that I have to honour: public perception!

"I have not met a single colleague in the market who was able to split his insurance loss database into the two components of 'pure randomly caused losses' and 'losses due to underwriting failures.'"

Eberhard Müller, CRO, Hannover Re

If, for whatever reason, there is public awareness of a specific scenario regardless of the actuarial estimate of its return period (i.e. occurrence probability), I have to be prepared to provide answers. Let's assume a "Mexican flu" environment dominates the daily news in an unprecedented way. If the value drivers for my operation (e.g. analysts, rating agencies and also regulators) are asking me about my preparedness for certain scenarios, it is not sufficient to simply respond that scenarios like the ones currently under discussion in the media are so far beyond any realistic return period range that they fall outside the scope of my risk management.

Although this might be the "actuarial truth" it would trigger another risk category: reputational risk. The only appropriate response is to give serious consideration to any risk which is seriously considered by my value drivers.

This might not fit entirely with my own risk hierarchy as described above and may need some management decisions in addition to actuarial techniques to place it within the hierarchy. For sure, it will help to avoid situations where all the numbers might confirm my internal actuarial assessment but my investors have meanwhile withdrawn their capital as they have lost confidence in my ability to deal with the "risks under discussion" in an appropriate way.

Summarising the above, there are three steps that lead to finding out which risks really matter:

Step 1: Quantify the quantifiable risks as well as you can by applying state-of-the-art modelling techniques.

Step 2: Integrate qualitative risks into this quantitative framework as far as possible by using qualitative assessments and converting those assessment results into quantitative figures, e.g. by means of scoring procedures.

Step 3: Monitor the risk perception of your value drivers and explore the differences between their "risk hierarchy" and yours. Where necessary, move certain risks up in the risk hierarchy through dedicated management decisions.

Footnotes:

1. *A Global Framework for Insurer Solvency Assessment, Research Report of the Insurer Solvency Assessment Working Party, International Actuarial Association, 2004.*
2. *Bermuda Monetary Authority, Commercial Insurer Risk Assessment Procedures – Guidance Note # 17, November, 2008.*

Master of the risk universe

As chief risk officer at Sabanci Holding*, Turkey's leading financial and industrial conglomerate, DR TAMER SAKA's risk universe is ever expanding

What is your own personal background?

During my MA and Doctoral degrees, I worked as a freelance consultant on risk management and control process improvement. After, I started to work as risk manager in Arthur Andersen's Istanbul office and as senior risk manager in Ernst & Young. In 2004, I joined Sabanci Holding as Chief Risk Officer and initiated the group's Risk Management Department. I also currently hold the position of board member at various group companies. Additionally, I hold the presidency position of the "Risk and Value Management Working Committee" at the Turkish Industrialist's and Businessmen's Association (TUSIAD), and the "Enterprise Risk Management Association – ERMA" which is a member of FERMA.

What is your reporting line? How is risk management organised across such a widely diversified group?

As you said our organisation is a widely diversified group with 71 companies present in 18 different countries. In order to enable the whole group to manage its risks in the most effective and efficient way in a centralised structure, Sabanci Holding established a "Risk Management Department" in 2004. Sabanci Holding pioneered risk management focussed on industrial risks in Turkey and was the first corporation to structure a "Chief Risk Officer" position in the country. As the CRO of Sabanci Holding, I report directly to the CEO.

Today, Sabanci Holding's risk management department serves as a centralised department dedicated to managing the group's risks within its risk appetite by using defined processes and policies. Also, by leading the Sabanci Risk and Insurance Management Platform, which is composed of risk managers in each group company, we support the improvement of risk management skills of the companies.

Which risks keep you awake most? Tangible risks to do with property and liability or intangible risks such as brand/reputation, political and supply chain?

In a world that is changing at an incredible speed and is full of uncertainties, risk perception has been changing, too. It is not valid anymore to think of risk as a tangible notion that may affect only the assets. Today we see that notions to do with brands, customer, and sustainability are taking the top place in the agendas of upper management. And the risks coming with those notions are beginning to be considered as the most critical risks with consequences that may be difficult to recover from. For this reason, it is not possible to separate those risks from each other explicitly, according to their "tangibility". The Sabanci risk universe consists of several risks from most tangible ones like fire and business continuity to the intangible ones such as brand management, customer management and reputation.

Explain the Sabanci risk tracking and reporting system?

As I mentioned before, my risk management department centralises all the risk management activities implemented within the group companies and enables us to implement enterprise risk management principles effectively. Today, risks are identified, prioritised and monitored continuously throughout the group. Key risk indicators are defined, risk tolerance limits are set. Detailed action plans are formed for all of the critical risks and they are implemented step by step. During these processes, companies report their key risk indicators and current status of them and the improvements in their action plans continuously to the Risk Management Department. After this, all the information is consolidated, common group-wide risks and their status are analysed, and risk reports are prepared using the information and risk management department's foresight and expertise in specific risks. This risk report is delivered to the top management periodically.

Also, we are planning to conduct all ERM activities including risk reporting, through an online system in order to increase efficiency.

What sort of outside advisors do you use?

We do not have a permanent advisor on ERM activities; if it is needed we contact with some, especially in risk studies to do with mergers and acquisitions or new investments. But in the operational risk part, we do outsource site visits regarding the assessment of fire and boiler and machinery risks within our plants.

What emerging risks are on your radar right now?
Following the global financial crisis, financial dynamics have changed. So in 2009 we mostly focused on foreign currency risk, credit risk, and liquidity risk. Additionally, the most important topic this year for us is sustainability, which is analysed in a broad context including risks regarding the environment, social responsibility, workers health and safety, human resources and so on.

How do you and your team monitor emerging risks, practically speaking?
As you know, accessing information is the key and prerequisite of being "proactive". If we cannot gather information or data necessary for analysis, we manage crises after the risks have been realised. Starting from this point, first we identify the emerging risks that we should monitor continuously. Then, we identify the key risk indicators (KRIs) which may give an indication about the current status of risks within the companies. Companies monitor and track those KRIs and continuously report to the risk management department. But it is also necessary to monitor the external factors causing risks. For this purpose, we use tools such as timely information provider programmes, country risk monitoring reports, publishing and so on.

At what stage is Sabanci on the ERM journey?
Looking at the risk management maturity level of Sabanci group, it is not false to say that we are on the way to the ideal, advanced level of risk management implementation throughout the group. Risk management policies and procedures are defined, risk assessments are conducted, strategies are set and risk management actions are planned in a continuous manner. Each company has started to develop their own risk management departments and assigned risk managers responsible for ERM implementation. Risk committees are formed where high priority risks are reviewed and discussed with the attendance of top management. But there is always room for improvement in integrating all of those processes with the decision making system, embedding the risk management culture in the daily operations of companies and increasing the level of risk awareness of employees in the bottom line.

How would you define the objective of ERM at Sabanci?
The main role of risk management is to ensure that the risk appetite of the shareholder is transferred proportionately within the business units and that any surprises that may be faced in the future are minimised for a sustainable growth and profitability. Currently, while improving our "maturity level" within the risk management transformation process, we aim to integrate risk management activities more deeply both in holding and company level decision-making processes.

What (IT) tools do you have at your disposal?
We are planning to provide a professional risk management software solution to be used throughout the whole group but currently we use a combination of local and standard programmes.

How has the financial crisis changed your view of insurers?
It is now clear that the financial crisis has fundamentally changed the political and regulatory environment for financial services. Whilst still evolving, it is increasingly clear that insurance businesses will be affected to some degree. These changes and uncertainties are collectively creating a significantly more complex environment for insurers as they consider how to deploy resources and where to invest for future growth and success. There is no doubt insurance companies are developing different strategies and structures to suit the current environment and as insureds we will see those differences reflected in the near future.

Is insurance more or less an attractive risk transfer option for Sabanci, compared to say, 10 years ago?
As it gets more and more important for economies to maintain growth, the tolerance for losses decreases. For this reason, insurance should not be treated as an additional cost or burden but an essential element of risk management.

As Sabanci operates in different countries with a diversified asset portfolio, we put special emphasis on risk and insurance management. We have a team of insurance specialists with sectoral background working to make sure that Sabanci is one hundred per cent covered and in the most efficient way.

How could insurers make their service – or solutions – more attractive to Sabanci?
Our relationship with insurers depends on the level at which parties understand the needs and objectives of our business. We expect the insurer to know our situation, to be able to point out our risks, and the weak points of the business cycle. They should be able to provide us with research, ask questions, and apply their knowledge and resources to arrive at a clear and comprehensive picture of our particular circumstances. As a result, tailor-made insurance coverages serve us best.

**Sabancı Holding's main business units include financial services, energy, retail, cement, automotive, tire and tire reinforcement materials. Listed on the Istanbul Stock Exchange (ISE), Sabancı Holding has controlling interests in 11 companies also listed on the ISE. Sabancı Group companies currently operate in 18 countries and market their products in various regions in Europe, the Middle East, Asia, North Africa and North and South America. In 2009, consolidated revenue of Sabancı Holding was US$ 12.2 billion with an EBITDA of US$ 2.6 billion.*

Risk and reward

JULIE CONNORS was recently appointed CRO of Interpublic, one of the world's leading organisations of advertising agencies and marketing services companies. She says a key priority is to expand the risk management focus beyond compliance

What is your career background?
I was a formerly a partner at Deloitte & Touche where I was one of the leaders of the firm's enterprise risk services and internal audit practices. My experience at Deloitte included helping Fortune 500 companies design and implement risk management programs across a variety of industries, including retail, consumer products, media and entertainment and financial services. Having such a variety of clients gave me an opportunity to compare and contrast widely divergent approaches to risk management.

While at Deloitte, I worked with Interpublic Group for several years and gained a strong appreciation for the organisation, its historical challenges and its tremendous potential. While I was not planning to leave Deloitte, I recognised a unique opportunity to play a key role in IPG's future success. My institutional knowledge gained from working with the company and having the opportunity to see their top notch management team make significant changes over the past few years made me comfortable that my decision to join IPG was the right one.

IPG had its challenges complying with SOX and enhancing its financial reporting processes including financial restatements. As a result, IPG's risk management and internal audit processes over the last few years focused intensely on internal controls over financial reporting, anti-fraud and asset protection. IPG, overall, has significantly strengthened its control environment and processes, is now SOX compliant and has become a much more disciplined organisation.

As the company has matured, the time came where we should begin expanding the focus of the risk management program beyond asset protection and compliance and towards value creation. This is one of my key priorities for 2010 and beyond.

"The biggest part of my job has been going out and talking to people all around the world, in some of the most remote places... If I go to them and ask insightful questions, it helps them think about their objectives."

Julie Connors, CRO, Interpublic

So will the job change with you?
There's a lot on my plate now! My current areas of responsibility include Enterprise-wide Risk Management, Internal Audit, Fraud Investigations and Prevention, Business Continuity, Security and Privacy, Code of Conduct, Policy and Procedure Administration and Compliance.

These areas are obviously critical to value preservation and we have established policies, procedures and controls in each of them. But there's always room for improvement, and one of the key changes I am currently addressing is to expand our risk framework to address the full spectrum of risks including areas that offer opportunity for value creation.

This means a shift from a historical focus on asset protection and financial reporting, to now also including areas such as client contract compliance to help support client. Expanding our focus to include areas of operations and execution will support better decision making throughout the entire organisation at all levels and will make us more competitive.

I'm also planning to increase efficiency of risk management to help reduce the burden on the business - through improved coordination, elimination of redundancies and leveraging technology.

I have talked to many organisations that resist the notion of having a CRO because it could potentially be viewed as taking responsibility for risk management away from management. While I do have direct responsibility for managing the areas noted above, as CRO I am not responsible for managing all risks to the organisation. My primary responsibility as CRO is to establish and monitor our risk management process and infrastructure to ensure it is well designed and operating effectively.

What is unique about IPG's risk environment?
What is unique about this company is that we have agencies in 120 countries, structured in five networks. Most of these agencies operate semi-autonomously with their own CEOs. In some markets, our agencies may compete with each other fiercely for the same business. The challenge is to balance the autonomy necessary to allow the cultural and creative differentiators to flourish yet leveraging the scale of a $6 billion organisation and ensuring a strong control environment is maintained.

We have many layers of risk management activity going on throughout the organisation and there is clear opportunity to harmonise, rationalise and align these activities with today's risk profile. Our organisation-wide effort to optimise our risk management activity will not only create efficiencies, but also enhance quality of information and our ability to proactively respond, as opposed to react, to opportunities to create shareholder value.

What risks does IPG and its agencies face?
Advertising is a highly competitive industry. The biggest challenges for the agencies are winning new business and retaining clients. Our top ten clients represented almost one quarter of our total revenue in 2009. While we believe it is unlikely that we would lose the entire business of any one of our largest clients at the same time due to competition, a substantial decline could have a significant impact, so consistent excellence in client service is absolutely critical.

Another challenge is retaining or failing to attract the very best people, the intellectual capital, at our agencies to service these clients. Our employees, their skills and relationships with clients, are among our most important assets. Related to this, intellectual property (IP) is also very important and we have to be very careful about how we structure arrangements with our clients so that we don't compromise our IP.

Extended enterprise risk is an area that has become an increasing concern for most businesses, including us. Our agencies work with many different big and small vendors to deliver advertising and media services to our clients so we need to support our agencies in managing the risk of those extended enterprise relationships. The same goes for our clients. As advertising and marketing is often a significant spend for most companies, I often get involved with clients to provide them assurance about how we manage risk by making them aware of the programs we have in place worldwide, such as our business continuity capabilities, security and privacy policies, internal audit procedures, other compliance programs and our code of conduct requirements.

What risks keep you awake at night?
The risks that tend to keep me awake at night are

the ones that I can't control – like the economy. Our business is very influenced by the effect of economic conditions on our clients. The global recession impacted the industry on a world-wide basis. Clients pulled back on spending during the recent downturn because they had no choice and we had to react quickly to align our cost structure.

As a global organisation in 120 countries, we are very sensitive to the unique risks in doing business around the world including understanding cultural differences, differences in employment and privacy laws or the norms of advertising and what is acceptable. We also closely monitor geopolitical risks such as the recent political unrest in Asia and Latin America. In these cases, we have been quick to take action, especially if we believed our people were at risk. For example, the recent unrest in Thailand and earthquakes in Chile put our business continuity program to the test. I can proudly say that we kept all of our people safe and agencies running, serving our clients and even delivering pitches and winning new business without having physical access to our facilities.

Reputational risk is one of our highest priorities. We sell work and build our client base through our brands. When we consider risk factors in our scenario planning, we also evaluate the potential impact on our reputation. A security breach of our client's information for example would be devastating to our reputation and accordingly, receives the highest mitigation priority.

How do you disseminate the Enterprise Risk Management message throughout the organisation?

I try not to use the term ERM or even mention the word risk too much! The term ERM carries baggage and risk is a scary four letter word for some people. The people I deal with are CEOs, CFOs, controllers, and creative people that are very entrepreneurial. Our people need to take calculated risks every day to build the business and we need to encourage that. The conversations are much more productive when I ask them how I can support them in serving their clients with distinction and become trusted advisors. If you simply talk about risk and mitigation strategies, people will shut down on you.

Is a proprietary ERM system necessary?

One of the key things I learned in my experience serving a wide variety of clients at Deloitte is that risk management practices often vary significantly between companies and what's right for one company may not be right for another. Factors like industry, size, structure and, most importantly, culture all play key considerations in designing a risk management program.

From a systems perspective, our risk assessment process has been primarily Excel and Word based. However, as we continue to move the needle from an assessment based risk model to a management-based risk model, we will require more robust technology tools to more effectively capture information and monitor our process and key risk indicators. I'm looking at some options right now. The marketplace for software solutions continues to evolve. As you might expect, our systems environment is fairly heterogeneous. We have a very well developed Open Pages tool that we use for operational control and SOX compliance. We also use data analytics, Key Performance Indicators, what we call KPIs, and have a variety of other tools in place monitoring risks at different levels throughout the organisation.

My vision is to collect all this information and house it in one place to more fully integrate our compliance systems with our financial systems to allow us to more effectively monitor key risk metrics across the enterprise.

What about insurance? Is that part of your remit?

It wasn't very long ago that risk management was considered to be synonymous with insurance, which was addressed by a function in the finance department, such as treasury.

I serve on a committee that monitors our coverage and potential claims. I report to that committee on the compliance issues and potential risk areas I'm seeing.

Insurance does play a role in our risk framework, especially as it relates to asset protection. I view it as the mitigation strategy of last resort, especially as it relates to catastrophic losses.

What does it take to be an effective CRO in the world of advertising?

An understanding of the business is very important. Coming from being part of the revenue stream of another large professional services firm has been surprisingly helpful in that regard. I know how project management works, how utilisation of people and resources works and - most important – how we make money. I find it is very important to understand the commercial side of this business and not just the back office aspects.

In a decentralised, far flung organisation like ours, it is crucial to get out to the field, to interact with people at all different levels. The biggest part of my job has been going out and talking to people all around the world, in some of the most remote places. It is the people on the ground, in our agencies who make decisions everyday that affect our risk profile. If I go to them and ask insightful questions, it helps them think about their objectives and approach what they are experiencing in their market in a risk intelligent way, I'm very careful not to appear to be someone who is presenting obstacles to creativity or entrepreneurialism. I'm there to help – not hinder their ability to be profitable. They need to trust me and come to me for support and guidance.