

*Enterprise Risk Management: A Consultative  
Perspective*

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## ENTERPRISE RISK MANAGEMENT: A CONSULTATIVE PERSPECTIVE

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### ABSTRACT

This paper will address enterprise risk management from a non-technical consultative perspective. It is our belief that in the upcoming years enterprise risk management will change the way companies view insurance, will influence who the actual buyer of insurance is, and will change the overall risk approach to less transactional and more strategic. An introduction to the topic will be provided and then a series of questions will be addressed:

- What is driving companies to consider enterprise risk management?
- What are current trends and opportunities in the consultative role of the actuary?
- What skill sets are companies seeking in enterprise risk consultants?
- What techniques are companies and consultants using for risk identification, analysis and modeling (non-technical)?
- What are the strategy and program implementation issues?
- What are the potential obstacles?

Conclusions will then be provided giving a perspective of how enterprise risk management and the associated consultative techniques will change "Insurance in the Next Century".

### INTRODUCTION

We believe that enterprise risk management will change "insurance" as we know it in the 21st century. A college finance professor recently commented that enterprise risk management would revolutionize the way that companies view risk, both from the capital markets/insurance side and the client side. Historically,

companies have viewed risks in silos with each silo representing a specific risk, e.g. interest rate risk, commodity risk, workers compensation risk, product distribution risk, etc. Companies have analyzed each risk silo separately and developed unique strategies (including hedging strategies) for each specific risk. The goal of enterprise risk management is to develop an overall corporate strategy for addressing risk. Enterprise risk management requires companies not only to analyze each risk separately, but also to analyze the correlation of the various risks.

For example, companies are realizing that two risks that were hedged separately may in combination form a natural hedge. Consider a simple example of a magazine publishing company that has an increase in the demand of advertising space. This would likely increase the cost of paper used in the publication. Little or no hedging, however, would be necessary as the advertising revenues would offset the paper costs. In more complex examples, enterprise risk management can allow client companies to squeeze out excesses in their expense costs due to the discovery of natural hedges and the potential elimination of hedging costs.

Another advantage of enterprise risk management is that a company can analyze an occurrence caused by a group of risks (with each risk having its own unique hedging strategy) that are positively correlated. An example is a power utility with a power plant that must be shut down for three days due to damage from a severe storm. During the first day the plant is down, the temperature gets very cold and remains cold for all three days the plant is down. The cold snap in turn causes the spot price for electricity to skyrocket. Individually each of the risks is hedged by the power company to some extent. The power company has loss of use coverage for the plant so there may be some coverage for the down time. The power company also has some weather coverage but it is based on total degree-days. Depending on the temperatures for the remainder of the heating season, there may be no reimbursement from the weather policy. Additionally, the company has hedging in place to protect itself from volatile spot prices during normal usage. The problem is that there is some hedging mechanism in place for each of the risks, but there is no hedging mechanism in place to protect from the large unanticipated event caused by the combination of the risks occurring simultaneously.

Another interesting example of risk correlation is currently unfolding in the soft drink industry. It has been reported that a soft drink company has been testing a mechanism to change the price of their products purchased from vending machines based on changes in temperature. This is an innovative example of a non risk-financing strategy intended to take advantage of the correlation between temperature and the demand for soft drink products. Companies are now discovering the power of risk correlation to their bottom line. Analyzing risks and their correlations offer great opportunities for consultants. To take advantage of these opportunities actuaries will need to develop new skills and expand their knowledge beyond insurance risks.

There has been and will continue to be consolidation in the financial industry. With the demise of the Glass-Steagall Act, insurance securities and banking will combine. The financial corporations that are consolidating are indicating to security analysts that there will be cost savings from cross selling products. Enterprise risk initiatives provide products and strategies that can leverage the synergy of the consolidated financial company. This means that the company actuary will also have to develop the necessary consulting analytical skills.

The analysis of the risks and their corresponding correlation is a function that an actuary can perform for a corporation, both as an insurance company actuary and as a consulting actuary. But the actuary will need additional skills and must be able to think "out-of-the-box" for answers. This paper will address a series of questions regarding the consultative area of enterprise risk management and the skills that will be needed for an enterprise risk consultant in the 21<sup>st</sup> century. Additionally, the changes to insurance in the next century that could be ushered in with enterprise risk strategies will be highlighted throughout the paper. "Company" in the remainder of this paper will refer to a client company seeking enterprise risk advice or consultation, unless otherwise noted.

## **WHAT IS DRIVING COMPANIES TO CONSIDER ENTERPRISE RISK MANAGEMENT?**

Many believe that enterprise risk management is a fad. Others believe that the concepts make for great theory but can not be practically implemented. In light of the skepticism the concept continues to gain momentum and more and more companies are embarking on enterprise risk management initiatives. An enterprise risk management “initiative” might include risk mapping/profiling, overall risk control strategies, risk financing, and other innovative risk strategies such as discussed above in the vending machine example. We believe that there are several drivers of enterprise risk management initiatives:

- The treasurers’ increasing role in overall risk management
- Corporate governance issues
- Competitive advantages
- Earnings protection
- Enhanced computer technology
- Increasing complexity of risk

A growing number of treasurers are taking on broader responsibilities in regard to risk management. Often the traditional insurance “risk manager” as well as the financial risk managers report to the treasurer. The strategic goals of the treasurer, however, versus the operational goals of the traditional risk manager are often at polar opposites. There have been multiple articles, publications, and surveys that indicate between 70%-80% of treasurers believe that enterprise risk management techniques are valuable and will increase in importance in the next five years. However, only 15%- 25% of traditional risk managers indicate similar beliefs regarding enterprise risk management. We believe that the treasury function will expand and that treasurers will continue to assume broader responsibility in the management of the enterprise’s risk. For example, we are aware of multiple situations where the treasurer or CFO was working on an enterprise risk management initiative without the involvement or knowledge of the traditional risk manager. Generally, a treasurer’s interest (as a first step) is to combine the traditional insurance risks with financial risks to produce consistent approaches to risk as well as cost efficiencies in a risk-financing mechanism. The treasurer’s increased interest and role in enterprise risk management could therefore lead to a change in “insurance” buyers in the 21<sup>st</sup> century – from risk manager to treasurer.

Corporate governance issues have increased dramatically in importance over the last two decades both in the U.S. and globally. Corporate governance attempts to increase shareholder value by ensuring that corporate management is both accountable for and focused on issues that will improve the performance of the corporation. Corporate governance issues usually vary by country, as there are many organizations in various countries that publish corporate governance guidelines. **This paper will include significant information on corporate governance, not because it is the largest driver, but because the drivers of corporate governance are often key drivers of enterprise risk initiatives.**

Corporate governance has historically been popular on such issues as: disclosure, executive compensation, oversight, financial reporting, etc. However, language involving the word "risk" has recently become more common. This word is normally used in the context of management's responsibility to understand the risks of the company's business and to mitigate the effect of those risks to the shareholder. The following are the commonly enumerated benefits of corporate governance for public companies:

- Increased Shareholder Value
- Increased Market Capitalization
- Risk Reduction
- Improved Communication with Shareholders

These benefits are consistent with the goals and objectives of enterprise risk management. Although corporate governance guidelines vary by country, not all specifically contain language requiring a corporation to manage risk; **however, a consistent main objective of corporate governance is risk reduction.**

As an example, in December of 1994, the Toronto Stock Exchange Committee on Corporate Governance in Canada issued a report entitled "Where Were the Directors?". The recommendations were adopted by the Toronto Stock Exchange Board of Governors and were approved by the Ontario Securities Commission. The report presented guidelines for improved corporate governance in Canada and contains many recommendations as regards boards of directors for companies in Canada. One of the items in this report is

the proposal that the board of directors for Canadian companies understand **all** risks that could potentially affect their business.

The recommendation regarding risk in the report is contained as item number two in the list of specific responsibilities that are to be part of the board's overall duties. This item is labeled **Managing Risk** and states:

The board must understand the principle risks of all aspects of the business in which the corporation is engaged and, recognizing that business decisions require the incurrence of risk achieve a proper balance between the risks incurred and the potential return to shareholders. This requires the board to ensure that there are in place systems which effectively monitor and manage these risks with a view to the long term viability of the corporation. [1]

Enterprise risk management causes risk to be viewed more completely and consistently. Rather than focusing solely on hazard or financial forms of risk, enterprise risk management seeks to address all events that might adversely or positively impact the performance of the organization. Companies that understand their risks better than competitors are in a very powerful position to leverage risk to a competitive advantage. Greater knowledge of risk delivers the ability to deal with risk that intimidates competitors, to project adversity better than competitors, and to manage risk at the lowest cost. Furthermore, one reason why many of the current risk-financing deals have been completed discreetly is due to the perceived competitive advantage that implementation produces.

Three additional drivers to mention are earnings protection, enhanced computer technology and the increasing complexity of risk. Many companies are currently seeking risk-financing vehicles or strategies that will allow them to deal with risks that have adversely affected earnings, but have not been aggressively attacked. Common examples might include weather, product recall or inventory obsolescence. Enhanced computer technology has allowed better data to be gathered for certain risks as well as increased modeling capabilities. Finally, companies face risk today that did not exist five years ago, particularly in light of



computer development and e-commerce. Risk continues to become more complex, and new methods of dealing with risk are thus continually explored.

The drivers of enterprise risk management as discussed in this section compared to the historical reasons for purchasing insurance is dramatic. The drivers are not primarily defensive and protective in nature but are strategic and can even be offensive. We believe these differences will influence the greatest changes in the way insurance is viewed by the consumers in the 21<sup>st</sup> century. The next section of this paper will highlight the current trends and opportunities for actuaries in the enterprise risk management arena.

### **WHAT ARE CURRENT TRENDS AND OPPORTUNITIES IN THE CONSULTATIVE ROLE OF THE ACTUARY?**

Enterprise risk management offers a great opportunity for actuaries to increase their consultative role, specifically as an enterprise risk team member or leader. Besides additional consultative opportunities in the insurance area, enterprise risk management will open consultative opportunities with other divisions in the client companies, such as the treasury department, the financial department and the operations department. These are all areas that actuaries have had limited access to historically.

Actuaries will have to augment their skill sets to have an understanding of various financial instruments. The actuary does not have to be an expert on every type of financial instrument, but needs to have a general understanding of the primary financial instruments to be able to analyze combined portfolios of hazard, financial, and other non-traditional risks. It is important to remember that professionals from other units have been analyzing risk for their specific risk silo. Some professionals, such as foreign exchange traders, already analyze the correlation between the risks of various currencies. The actuary needs to develop the skills to take the statistical distributions from various risks and to be able to analyze portfolios of risks.

There is a trend in the actuarial profession towards enhancing the financial knowledge of actuaries. One need not look beyond the revised syllabus for 2000 to see the greater emphasis on financial knowledge. An increased knowledge in financial risk analysis will be necessary to take an active role in the enterprise risk

area in the 21<sup>st</sup> century. Already an increasing number of actuaries are coming out of college with an MBA, returning to college in an Executive MBA program, or enhancing their knowledge of financial instruments.

Another area in which the actuary can demonstrate their consultative skills is in analyzing non-traditional risks (other than hazard and financial). Many of the risks that are analyzed in an enterprise risk program are not the typical hazard and financial risks. Enterprise risk management will greatly enhance the type and number of risks to be separately analyzed. Examples of non-traditional risks that might need to be analyzed are product distribution risk and brand name risk. The actuary will be able to bring to the table experience and disciplined approaches in analyzing risk to include the non-traditional risks.

It is important that the actuary be able to assist in the development of an enterprise risk **strategy** – to move beyond simply providing financial solutions. In analyzing risk, the actuary must look at both the financial aspect and the operational aspect of each risk. Again, the actuary has training in analyzing risk in both of these aspects. For example, in reserving, the actuary must not only analyze the claim amounts but also the operation of claims reporting. The actuary will now have to enhance their skills in analyzing various types of operational risks and developing strategies that may not involve risk-financing strategies.

In summary, it is important that the actuary be able to think “out-of-the-box” or in this case “out-of-the-insurance-silo.” For those actuaries who can transition to this new role there is tremendous growth potential for their job skills and their role in the consultative process. For those actuaries that can not get out of the insurance silo, their role in their company will diminish. This consultative process will also apply to insurance companies. Insurance company actuaries can take the lead in developing and pricing new enterprise risk products for carriers. Just like the consultant, if the actuary does not enhance their skills or get out of the insurance silo, their corporate roles will also likely diminish.

## **WHAT SKILL SETS ARE COMPANIES SEEKING IN ENTERPRISE RISK CONSULTANTS?**

The prior section focused on actuarial opportunities in the enterprise risk arena. This section will focus on what skill sets companies are looking for in general from the consultants on their enterprise risk team.

Enterprise risk consultants must have a wide range of quantitative skills and strong communication skills.

It is our opinion that a team approach is necessary and it is not logical to assume that one consultant can be trained to be an "expert" in all the many different risks that face a company. The new chief risk officer of an alternative risk division of a large carrier was recently quoted as saying:

"It is madness to think that traditional approaches to risk measurement – like actuarial work on the insurance side or quantitative analysis on the banking side – can still be applied in isolation. If you want to include financial risk protection in an insurance policy, then you have to use both disciplines." [2]

Most companies are looking for a team of individuals with expertise that matches the profile of how they perceive risk within their company. For example, one agricultural company felt that its biggest risks were environmental, weather, inventory obsolescence, and credit. The consultants on this project therefore, consisted of an actuary, a statistician and a financial risk consultant. Some companies view hazard risks as minimal compared to strategic business risks (e.g., new product development, marketing, etc). These types of projects often require business consultants and might even involve very little quantitative analysis. It is important to note, however, that certain business risks may be linked to risks that can be analyzed. For example, one company perceived its largest risk as the loss of customer demand for their leading product. They indicated, however, that in their opinion the cost of aluminum (and a couple of other commodities) was strongly correlated to their customer's demand (as the customers were heavily dependent on these commodities). A financial risk consultant would likely be valuable on this project. On the surface, however, it might often appear that little can be done to implement a strategy of control or risk-financing for what are perceived to be normal business risks.

The skill sets required to implement a risk-financing program as a strategy for risks that have previously been self-insured or commercially insured are more definable. While the obvious skills include strong quantitative abilities, there are several additional skills that are essential - including communication,

marketing and sales, and project leadership. Assuming a predefined set of risks for consideration, it is important to put together a team of individuals so that each risk being considered can be modeled or analyzed by someone with expertise on that risk. It is also important to have a marketing team member who can assist with program design and implement the program with the desired market. Each team member must have basic understanding of the way all risks are analyzed and how all of the risks being considered interrelate. Additionally, the quantitative team members must be able to assist the marketing team member with program design, and must assist in the pricing phase of implementation. All of this effort requires sound communication on many fronts: with the client, within the team itself, and with the markets.

Project management skills also take on more importance. Projects of this nature tend to be more long term in nature. There are many deadlines that must be met along the multiple phases of the project.

Management of the handoff between the marketing and quantitative leaders is vital. Project management skills are often overlooked and not considered important, but they can be the single most important skill needed for the project leader on an enterprise risk-financing program.

## **WHAT TECHNIQUES ARE COMPANIES AND CONSULTANTS USING FOR RISK IDENTIFICATION, ANALYSIS AND MODELING?**

Prior to the implementation of an enterprise risk strategy, the risks must first be identified. There are several trends in this area. First, many companies are forming internal risk management committees that go well beyond addressing the traditional hazard and "insurable" risks. Outside consultants are often retained to assist these committees in the identification of risks. The committees are often comprised of a large cross section of the varying departments and disciplines within the company in an effort to identify and prioritize the key risks. This approach is much more common in non-Fortune 500 companies since the departmental silos may not be as strong. After the committee or consultants prioritize the risks, strategies can be developed and implemented:

- internal strategies for the mitigation and control of the priority risks can be developed
- external strategy development which may include a risk financing program for previously un-addressed risks can be developed

The risk identification phase can often use very qualitative assessments of risk; however, the quantitative analysis involved in an enterprise risk management initiative is often due to the company's desire to use a risk-financing mechanism. Risk-financing mechanisms can take on many forms or program structures, but the driver of form and structure, as well as the ultimate pricing, is driven by the results of the quantitative analysis and modeling. During this phase of the process, most companies seek consultants to perform the analysis, develop a potential program structure, develop a cost benefit analysis, and assist with implementation of the program.

The type of analysis and methodologies used depend first and foremost on the type of risk being analyzed. Traditional hazard risks generally are analyzed and modeled using traditional actuarial forecasting techniques. These usually include a forecast of losses for the time period, and a forecast of the component frequency and severity assumptions (including distribution summaries based on historical data) that comprise the total forecast. This process usually relies on historical and projected loss and exposure data and industry information where appropriate.

For risks such as weather, advanced statistical methods are often required which might include advanced regression techniques. For the financial risks, often the projected volatility is determined by "financial engineering methods". The goal of these methodologies is to forecast future volatility and drift (trend) based on historical data. The key for many of these financial risks is to determine the appropriate time period that should be used. Often financial data is available for longer periods of time than traditional hazard risk data. How much credibility to give to long term period versus the current short-term period is a very critical issue.

As noted earlier, there are often many different types of risk consultants performing analysis for an enterprise risk-financing program. One of the key considerations in developing and communicating the analysis for an enterprise risk management program is in displaying the results or describing risk in a consistent framework. Regardless of the type of methodology used to analyze the various component risks for a prospective program, the consultant must be able to combine the risks into a common portfolio in an understandable way. Sophisticated modeling and simulation techniques can be used to complete this phase of the analysis.

The portfolio analysis produces the biggest quantitative challenge in determining the correlations among the component risks. There is significant industry data available on correlations for some financial risks (such as correlations among currencies). However, the correlation analysis is often subjective as most companies do not have sufficient data to track risk correlations. Even if industry information can provide insight into the correlation between component risk parts, it may not be appropriate for the company specific application. This is one area for which considerable future research seems to be needed.

## **WHAT ARE THE STRATEGY AND PROGRAM IMPLEMENTATION ISSUES?**

As mentioned in the prior section, before a company begins to develop a strategy and define a program, a determination of what risks are to be considered in the strategy must be made. The risks to be analyzed can be determined in various manners. The main method of identifying the risks to be analyzed is by risk mapping/profiling. For most companies there are a plethora of potential risks to be analyzed. Risk mapping/profiling allows a company to prioritize risks based on their impact on the variability to corporate earnings. For most companies a small number of risks creates most of the potential variability in corporate results. Regardless of what risk-financing strategy might be used, it is best to initially focus on the small number of risks that have most of the impact on the variability of corporate earnings.

Once the initial risks have been identified, each risk will need to be separately analyzed. If a risk retention analysis has not been completed, it should be completed early in the process. The risk retention analysis

will assist the company in determining the maximum amount of retained costs, loss in revenue, or a combination of both that can be absorbed before pre-determined corporate constraint criteria are violated. Corporate constraints might reference retained earnings or earnings per share falling below some predetermined amount.

Another main implementation issue is allocation of the retained costs. It is likely that each risk silo produces a different "appetite" for the amount of costs to retain. The enterprise risk strategy may require operational units to take a higher retention. The higher retention may be good for the corporation but it may add to the variation of results for the unit. The enterprise risk consultants must work with the corporation to develop an allocation method that is equitable to the various operating units.

Another implementation issue in regard to risk-financing programs is finding appropriate indexes. Indexes are often used for commodity risks and non-traditional risks within enterprise risk-financing programs to determine when an event occurs and the associated dollar value. These indexes must be independent and published. An example would be the amount of rain measured at a specific weather station or the foreign exchange rate for a specified time period of a particular country. If the consultant is modeling the impact of the United States economy on a specific industry, then an index such as the CPI or consumer confidence index may be used.

One issue specific to actuaries is the calculation of the required reserves for an enterprise risk-financing program. As most enterprise risk-financing programs are three or five years, actuaries will need to be able to calculate the expected amounts for the program each year. Actual results will then have to be considered to develop appropriate reserves for the financial statement. This will require a reserve analysis for the whole program not just the insurance risks. The actuary will have to examine the contract to determine what the triggers are and what indexes are being utilized in the program. For complex programs involving multiple years, determining the appropriate reserves may be difficult. New actuarial techniques may need to be developed.

As the program structure takes shape, the consultants must ensure that there is a market for the combination of risks that the program may combine. The program should be flexible enough to handle the addition of risks at a later date. Additionally, the indexes that are used in the program must be agreeable with the intended markets.

Sophisticated modeling software is critical to the design of the program structure. The final program may look substantially different from the initial version. Because of the potential amount of changes, a sophisticated software program makes continual analysis of changing parameters time efficient. The software is also necessary to quickly change the mix of risks to meet the appetite of various capital markets. The next section will clarify some of the issues that commonly become obstacles.

## **WHAT ARE SOME POTENTIAL OBSTACLES?**

Because enterprise risk management is such an emerging area, obstacles can arise from many sources. These might include internal organizational obstacles, quantitative obstacles and implementation obstacles. This section will address some of the common obstacles that must be overcome to successfully implement an enterprise risk strategy.

There are several organizational obstacles that can exist. For an enterprise risk initiative to succeed there must be a leader of the initiative. This is often the treasurer, CFO, risk manager, or someone from internal audit. Depending on the leader, the organization obstacles vary. For example, as discussed earlier, there are differing philosophies and approaches from the perspectives of the risk manager versus the treasurer. Furthermore, we are familiar with many cases in which the treasurer or CFO pursued an enterprise risk initiative without the knowledge and/or support of the risk manager. This is a prominent obstacle because often the first step in enterprise risk management risk financing program is the addition of one or more financial risks to a portfolio of property casualty risks (with the possible inclusion of benefits). Often the financial risk management and hazard risk management report to the treasurer or CFO. We are also aware of companies that had enterprise risk initiatives underway that were being led from the internal audit



department. The goals in this scenario are often less of a financial nature and more control and mitigation. As enterprise risk management continues to emerge and companies do indeed seek to include or consider all risks, the departmental layout and "silos" become even more important as well as alignment of the goals and objectives across departmental units.

Often the most critical risks that a company faces are managed from differing departments. These departments often have little communication and/or cooperation. It is our experience that many of the largest companies (with multiple "risk management" departments) have little chance of success in implementing enterprise risk management initiatives. For example, we recently worked with a large company whose "intellectual property" risk was key in comparison to other risks the company faced. The treasurer wanted to investigate the possibility of implementing a strategy to address this risk with the traditional hazard risks and credit risk. The legal department, however, refused to release any intellectual property claim or incident data to the risk management department or outside consultants. After months of internal conflict, the risk was no longer considered as a possibility.

Assuming a company can agree to pursue an enterprise risk management initiative for a pre-selected group of risks still does not insure success. For example, if the goal is a risk-financing strategy, one common obstacle is the lack of credible sufficient data on which to complete the quantitative analysis. Most companies have reliable data for the traditional hazard and financial risks. However, for some risks, such as weather and commodity risks, data has never been collected within the company. Industry data is often available for many such risks, but the crucial task is always using the data in a way that is reasonable and appropriate for the company.

Implementation of any strategy also produces obstacles. For non risk-financing strategies, often budget and time constraints within a company prevent the strategy from being implemented in the desired amount of time. For risk-financing strategies there are several obstacles as regards the markets willingness to assist in the risk-financing mechanism. For example, at this point in time there are a limited number of markets in the capital market and insurance arena that are willing to participate in enterprise risk financing programs.

Within this limited number each risk taker has different philosophies on risks that they are willing to participate in, how pricing will be determined, how the policy will be issued, how reinsurance might be involved, and how claims should be administered. We believe that market involvement should begin very early in the process to determine the realistic potential markets consistent with the company's objectives. We have found that in some cases the pricing itself is the final obstacle, as the actual savings might be less than the company desired to achieve with the strategy.

While there are many potential obstacles, there are also large opportunities for success in the current market. This is particularly true when companies undertake controlled and focused enterprise risk initiatives with clear objectives.

## CONCLUSIONS

We believe that corporations will change how they view risk, from a silo approach to an enterprise wide approach. This will offer a great opportunity for the actuarial profession. As is true of most changes, there is risk and reward associated with enterprise risk management. The reward stems from the basic concept of the actuarial profession and the critical need of enterprise risk initiatives - analyzing risk. It is logical for corporations to turn to actuaries to be the leaders in the enterprise risk area. Actuaries must realize that there are other professionals who are also analyzing risk, i.e. commodity traders, foreign exchange traders, etc. Some of these professions have already done extensive work with correlating risks within their area of expertise, such as foreign exchange traders. For actuaries to become the leaders in the enterprise risk area, new analytical skills will be needed as well as knowledge of risks outside of traditional "insurance". Some obstacles to enterprise risk management mentioned in this paper, viewing each risk in a silo, not thinking out-of-the-box and not developing the needed new skills, are just as relevant to the actuarial profession as it is to companies. If the actuarial profession stays in the "insurance silo" then the actuarial profession will see their role diminish.

We believe that enterprise risk management is the future of risk strategy and analysis for the 21<sup>st</sup> century. These strategies and analyses are in many cases completely different from traditional approaches. products

and analyses within the insurance arena. We believe that enterprise risk management will happen; the only questions are how fast and how far it will go. This paper has discussed some of the strategies and techniques necessary to analyze enterprise risk programs. Actuaries need to view enterprise risk management as an opportunity to demonstrate to other areas of companies (such as the treasury department, the financial departments and the operations departments), the actuarial profession's value on enterprise risk teams. The critical skills that actuaries bring are in analyzing risks, both traditional and non-traditional. It is true that change creates apprehension but we believe that the rewards are worth it and that the actuaries can be the leaders of change in the enterprise risk area.

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