ENTERPRISE RISK MANAGEMENT: THE NEW IMPERATIVE

AN EXECUTIVE WHITE PAPER

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EXECUTIVE SUMMARY

Enterprise Risk Management (ERM) is a new, strategic imperative that is gaining momentum. Leaner operating models and global sourcing have made companies stand up and take notice: managing risk is important! And Health, Safety and Environment (HSE) risk is no exception. According to AMR Research, nearly half of surveyed companies plan to increase spending on Operational Risk Management initiatives in 2007.[1] Organizations that effectively manage risks become more agile.

A new role is evolving within organizations, namely the Chief Risk Officer—or another CxO title responsible for enterprise governance, risk and compliance (GRC). This new role encompasses the entire business enterprise and differs from the limited-focus financial, insurance and safety loss prevention roles of the past.

Organizations are starting to see the value of, and asking for, strategic solutions like integrated ERM software. However, the software market often suffers from the "alphabet soup" syndrome—companies implement GRC, BPM (business process management), BI (business intelligence) and EPM (enterprise performance management) platforms, not always understanding how these solutions differ, how they overlap, or how they complement each other. Add HSE to the mix and it adds complexity.

Organizations that reach a certain level of business and information technology maturity can support an Enterprise Risk Management solution. These organizations establish a "risk culture" and gather risk intelligence. They adopt a process focus, not "siloed" issue-by-issue governance, risk and compliance focus. In addition, they establish a risk and compliance architecture that considers business processes, people, and information technology. Finally, they consistently communicate and train the organization on corporate policies and procedures.

Information technology enables companies to embrace ERM. Technology aggregates and consolidates data, transforming it into useful information, accessible throughout the organization; provides information transparency; assists in accountability, and helps to identify risks and opportunities for improvement.

MANAGING RISKS ACROSS THE BUSINESS ENTERPRISE

Companies balance risks and rewards every day as they make decisions, often with less than optimal information. How does this impact the overall risk of the business enterprise? Let's define *risk* and *risk management* to set the stage for *enterprise risk management*.

RISK DEFINED

Risk refers to a deviation from what the organization planned or expected. Risk has an upside—*opportunity*—as well as a downside—the potential negative impact to an asset. This type of risk—*loss*—can prevent companies from achieving strategic goals.[2] Organizations can turn risks into opportunities through effective Risk Management.

A scientific definition of risk is:

Risk = Impact • Probability

Risk is a future event (or series of events) with a probability of occurrence and the potential for loss or positive or negative impact on organizational objectives. Considering potential positive and negative outcomes, some suggest we use a new term, "Risk and Opportunity Management."[3]

Today, most businesses place risk in "silos" by business lines, departments, functions, and facilities. They take a reactive approach, responding to the most pressing guidelines and compliance mandates—in HSE, OSHA and the Clean Air Act; in Quality, ISO 9001 and ISO 14001; in finance, COSO, Basel II and Sarbanes-Oxley; and in Human Resources, EU Privacy Protection Directives and HIPPA (Health Information Portability and Privacy Act).

RISK MANAGEMENT

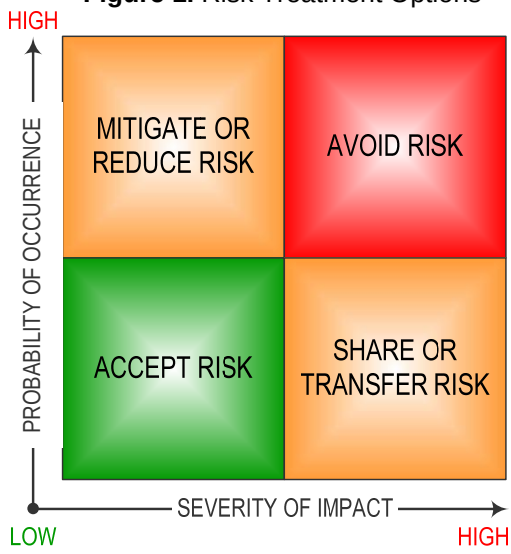
Risk Management is the process of reducing an entity's risks to an acceptable level, using measurement, management and monitoring that aligns with strategic objectives. Risk management may focus on one or more types of risks, e.g., risks from physical causes (e.g., natural disasters, or fires, accidents, death), legal actions, financial instruments or market conditions. The process involves systematically selecting cost effective approaches to risk.

Risk Appetite and *Risk Tolerance* describe how much risk an entity is prepared to accept. Risk appetite is a broader statement about acceptable risk levels, while risk tolerances are more refined statements about acceptable variations from objectives.[4] These are strategic decisions.

Before an organization can begin to manage risks, it must establish the context, conduct a risk assessment to identify risks, prioritize them, and then create a risk management plan to address them. Depending upon the probability of risk occurrence and the severity of impact, risk treatment options include sharing/transferring risk to another party (insurance), avoiding the risk, reducing or mitigating the risk impact, and accepting some or all of the consequences of a particular risk (Figure 1).

Risk Avoidance includes not performing an activity that could carry risk. Avoiding risks also means missing an opportunity that accepting (retaining) risks may have allowed. No enterprise can completely avoid and/or mitigate all risks; they must accept some level of residual risks. Companies should place priority on managing risks with the greatest impact and the greatest probability

Figure 1. Risk Treatment Options



ENTERPRISE RISK MANAGEMENT

Enterprise risk management (ERM) is a continuous process that involves managing risks across all parts of the enterprise.[5] It is a framework with functional and technology facets. "Enterprise risk management is a systematic and structured way of aligning an organization's approach to risk with its strategy. This helps the business to manage uncertainty more effectively."[6]

In ERM, a *risk* is a possible event or circumstance that can have negative influences on the Enterprise in question. Risk can impact the existence of the Enterprise, human and capital resources, products and services, customers, society, markets and the environment.[7]

ENTERPRISE RISK MANAGEMENT MODELS

In the last 15 years, several organizations have developed well-respected, global risk guidelines.

COSO ERM FRAMEWORK

In 2004 the Committee of Sponsoring Organizations (COSO) updated its Enterprise Risk Management framework model, known as COSO ERM. This model focuses on creating and assessing the effectiveness of internal financial controls.

COSO ERM puts compliance under corporate governance. The framework requires organizations to identify their risk appetite and develop a risk portfolio; companies invest in compliance based on mitigating the greatest areas of risk. The framework requires eight activities across four objectives—Strategy, Operations, Financial Reporting and Compliance (Table 1).

Table 1. COSO ERM Framework (2004)*

Objectives	Activities
• **Strategy**	• **Internal Environment**
• Operations	• **Objective Setting**
• Financial Reporting	• **Event Identification**
• Compliance	• Risk Assessment
	• **Risk Response**
	• Control Activities
	• Information and Communication
	• Monitoring

* Items in **bold** added in 2004; others established in 1992.

BASEL II ENTERPRISE RISK MODEL

The Basel New Capital Accord (Basel II) was developed in response to internal financial control issues, and organizations today apply its Total Enterprise Risk model. Basel II breaks Total Enterprise Risk into *Credit, Market* and *Operational Risk* (Figure 2).

Figure 2. Enterprise Risk Model

The remainder of this White Paper focuses on Operational Risk, "the risk of loss resulting from failed internal processes, systems and people, and external events."[8] Operational Risk includes *Business Risk* related to internal and external risks in the business environment, as well as *Event Risk* from non-economic events.

Senior management has an increasing awareness of operational risk throughout the business enterprise; operational risk is not limited to traditional "back office" activities. Companies conducted risk assessments (measurement and monitoring) in the late 1990s. However, companies still need to grapple with the definition of operational losses and need to collect additional data.[9]

RIMS RISK MATURITY MODEL

Various industries employ one Maturity Model or another for diverse functions from software engineering to human resources management. The Software Engineering Institute developed the Capability Maturity Model in the 1980s to improve software development processes. Known today as Capability Maturity Model Integration (CMMI),[10] it describes a path for organizations to improve their processes to develop and maintain their products and services.[11]

In 2006 the Risk and Insurance Management Society (RIMS) developed a model for Enterprise Risk Management. The Risk Management Model (RMM) fits with frameworks like the AS/NZS 4360:2004 Risk Management Standard,[12] COSO-ERM, Sarbanes-Oxley and others. It defines attributes that drive business value: 1) Adoption of ERM-based approach, 2) ERM process management, 3) Risk appetite management, 4) Root cause discipline, 5) Uncovering risks, 6) Performance management and 7) Business resiliency and sustainability.

The RMM describes five maturity levels, from Nonexistent to Leadership, for each of the seven attributes (Figure 3).[13]

Figure 3. Risk Management Maturity Model

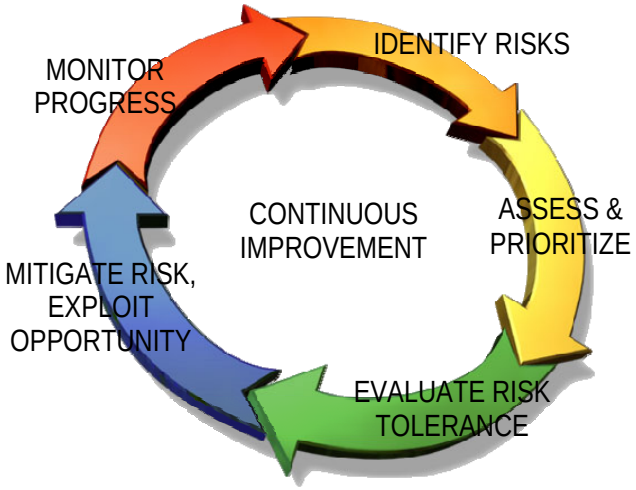
Evidence shows that organizations achieve measurable results as they increase their maturity level. Organizations, ERM stakeholders and Practitioners can realize numerous benefits (Table 2).

Table 2. RIMS Risk Maturity Model Benefits[14]

Organizations	ERM Stakeholders	Practitioners
• Face under-addressed risks and opportunities • Resolve inefficient business process • Build a repeatable and scalable decision making process • Reduce costs • Increase top line revenue	• Streamline the ERM process • Eliminate duplication of efforts • Connect support functions with process owners • Measure ERM value based on priorities • Create a shared language and vision	• Build consensus • Establish milestones • Benchmark best practices • Communicate clearly with stakeholders

Enterprise Risk Management is a continuous improvement process (Figure 4). Like ISO 9001 and 14001 Management Systems, success requires strong leadership commitment and support.

Figure 4. ERM Life Cycle



ENTERPRISE RISK MANAGEMENT DRIVERS

Today's businesses are global, 24/7 operations, whether facilities and customers exist within one country or span many continents; are in a growth or mature industries; are low-tech or high-tech. Businesses face a barrage of compliance pressures. They make decisions every day but are "risk ignorant" because they lack accurate, timely, trustworthy information. In addition, the processes and systems that help them manage their obligations are fragmented and duplicative. Process, people and technology issues drive the need for ERM.

Process issues

Today, Boards of Directors and senior management are more in touch with what takes place at "ground level" than ever before. Yet they find it difficult to explain day-to-day business processes. If processes are inconsistent and fragmented, organizations have difficulty in finding, analyzing and sharing data in a timely manner. Inconsistent, fragmented processes also generate hundreds (or thousands) of risks.

Enterprise risk and compliance issues are inextricably linked under the umbrella of Governance, Risk and Compliance (GRC). Organizations are changing the way they view GRC, as some of the most compelling issues today advocate a management systems approach, and thus, continuous improvement.

Fragmented business processes make it difficult to find, analyze and share information in a timely manner.

- HSE compliance – obligations under various external laws and regulations, as well as internal and external policies, procedures and guidelines.
- Basel II Accord and Sarbanes-Oxley (SOX) – corporate financial accountability.
- COSO – framework for Enterprise Risk Management (see above)
- ISO 9001 and 14001 – international Quality Management Systems (QMS) and Environmental Management Systems (EMS), respectively. These standards promote continuous improvement through the Plan – Do – Check – Act cycle, as well as integration of obligations into everyday business processes.
- OHSAS 18001 – assessment specification for Occupational Health and Safety Management Systems; part of a company's risk management strategy to address changing legislation and protect their workforce. The objective is to help companies to meet their health and safety obligations in an efficient manner.
- Six Sigma – a systematic quality program that provides a set of tools to manage and measure business process improvement.
- ISO 17799 – a comprehensive set of controls that represent best practices for Information security.

People issues

Organizational fragmentation, politics and culture shapes how those within the organization view risk, as well as accountability for activities that may cause risk. In addition, individuals have different views of risk, or may see only risk impacts, and not opportunities. Individuals within the organization need to achieve a shared understanding of risk.

Change is hard, and often system acceptance and adoption are the greatest challenges. The solution will be successful only if end-users find it valuable in their day-to-day roles and use it. Early and frequent communication with stakeholders, as well as adequate training, can overcome these challenges.

Organizations with operations that span continents encounter localization issues such as different cultures, languages, regulations and units of measure. Global operations call for an Enterprise Risk Management solution that provides 24/7 access and supports users in different countries.

In today's business environment, human resources are stretched to their limits. Like other software initiatives, Enterprise Risk Management requires a cross-functional team of business, operations, financial, subject matter and IT resources. Organizations may find that they lack the internal resources to commit to the effort.

Technology issues

Business silos create "islands of information" which result in an abundance of legacy systems that run on different technical platforms. By and large, these legacy systems do not map to the way that people work. To avoid maintaining the status quo, organizations must streamline and standardize their business processes.

Companies may find that they have technology limitations. For a successful Enterprise Risk Management effort, they must align their business requirements with their IT strategy. In addition, they must possess a solid IT infrastructure with adequate hardware, software, staff, policies and procedures to the effort.

Finally, the Total Cost of Ownership (TCO) may present a barrier. When estimating the TCO, organizations must look beyond the cost of software licenses or subscription fees plus implementation costs. To get a true picture, they must evaluate internal and external costs of the effort through its entire life cycle, from concept to design and implementation, through ongoing maintenance and support.

ERM SOLUTIONS

IT ENABLES ERM

Information technology and business are almost inseparable—it is hard to think of one without the other. In world of compliance and risk management, Information technology enables companies to embrace ERM. COSO and ERM have sufficient traction to be the basis for software product and related service design.[15]

> *Information technology and business are becoming inextricably interwoven. I don't think anybody can talk meaningfully about one without the talking about the other.*
>
> —Bill Gates, Microsoft Corporation

IT helps organizations to

- become more agile and more productive
- streamline business processes
- consolidate data from disparate sources and transform it into useful information
- make the right information available to the right people at the right time, at the right level of detail
- achieve information transparency
- make people accountable
- identify risks and opportunities for improvement

Several HES, Security and Quality process are ripe for automation. These include Incident, Task, Document and Compliance Management; Auditing, Monitoring, Training and Reporting.

HOW TECHNOLOGY WILL CHANGE ERM

Information technology will help organizations to improve their ability to identify, evaluate, categorize, prioritize and manage enterprise business risks. By standardizing business processes, organization will improve transparency and accountability. Technology will allow organizations to make better business decisions about which risks to accept, which to mitigate, which to avoid and which to transfer.

A number of recent and still-emerging information technologies will help organizations to be holistic and forward-thinking in managing Operational Risk:

- ***Dashboards and scorecards*** that display near real-time past and present trends and help to predict and prepare for future risks
- ***GRC, BI and BPM platforms*** that tie together automated workflows, analytical and decision support tools with business risk management processes
- ***Software delivered via the Web*** that allows 24/7, "anytime, anywhere" access to information

> *Technology is going to integrate/embed risk management to monitor, measure, and react to risk across the organization, its processes, relationships and industry.*
>
> —Forrester Research, *Enterprise Risk Agility*

- ***Web 2.0***, a transition from a collection of Websites to a full-fledged computing platform; a change in how software developers and end-users use the Web, i.e., for collaboration and sharing
- ***Business intelligence*** applications that provide tools to gather, provide access to, and analyze data and information about company operations
- ***n-tier architecture*** that allows customers to configure software easily and obtain relevant reports without the need for programmers
- ***Improved collaboration and communication tools*** that promote the sharing of ideas and information across time zones, geographies, facilities and business lines
- ***Software as a Service (SaaS),*** an updated way to deliver software over the Web on a subscription basis, eliminating the need for in-house servers, reducing the need for internal IT and business resources to support the software, and reducing up-front costs and the Total Cost of Ownership.

ERM SOFTWARE SOLUTION CAPABILITIES

ERM software solutions share a number of characteristics. They are user-friendly so that people in diverse roles within the enterprise will adopt them. They are process-oriented to accommodate many different types of compliance, policy and other obligations.

They are configurable, scalable and flexible to allow for differences among business lines, departments, functions and locations; they are global to address local issues. ERM solutions are consistent, efficient and sustainable to provide accurate and timely information to improve decision-making.

The following sections describe the generalized IT infrastructure and feature/function capabilities that work together to form a complete solution.

IT infrastructure

To provide the most value, ERM software should mesh with Corporate IT standards. It should integrate with other systems within the enterprise, capturing information needed to make sound risk management decisions. The system architecture, or IT infrastructure, should include the elements below (Table 3).

Table 3. Core IT Infrastructure Components

Objectives	Components
Analysis and presentation	▪ Dashboard ▪ Analytics ▪ Reports, queries
Data Management	▪ Unstructured data: content, document, records management ▪ Structured data: data warehouse
Business Process Management	▪ Business rules ▪ Automated business process workflows ▪ Alerts, collaboration tools
Security	▪ ID and security management
Platform	▪ Integration platform ▪ Software Developer Kit

People do not always embrace new technology, even when it works flawlessly. Sometimes, they are intimidated or not eager to change how they work. Each new technology must consider four factors—Design, Performance, Security and Usability. Usability is possibly the most important factor impacting user acceptance, and thus adoption (use).[16]

Technology must be intuitive to avoid frustrating users. Users should be able to quickly understand how to use the most important features in the context of their job role. The application should have clear-cut navigation, simple data entry forms and reporting tools that allow users to complete tasks quickly and easily.

The solution should be Web-based so that users benefit from ubiquitous, 24/7 access and the need little or no "client" software, no matter if delivered by the Internet or by Company Intranet. It should have a single, central database (or data warehouse) that serves the user nodes and should utilize common platforms and have an open architecture.

The software should be flexible and configurable, allowing organizations to produce data roll-up reports that fit with the business hierarchy. ***Software should be scalable*** to allow adding new sites and users. ***It should allow localization*** for global enterprises—configuration for different languages, cultures, regulations and connectivity.

The software should standardize and automate business processes and also provide users with or integrate with collaboration tools (e.g., e-mail, messaging, Web casts and shared work spaces).

The solution should be sustainable. As companies move from tactical to strategic, they need to realize that the scope and cost will increase along with increased complexity[17], integration with multiple data sources, data rollup capabilities, and more users (Figure 5).

Figure 5. Sustainable frameworks

Software features and functions

A capable ERM software solution should enable the enterprise to

- Manage, automate and alert
- Trace and monitor
- Synthesize, aggregate and correlate
- Predict, summarize and recommend
- Secure

The ERM solution should offer certain core features and functions (Table 4).

Table 4. Core ERM Software Functions

Objectives	Components
Analysis and presentation	▪ Graphical User Interface (GUI) ▪ Data analytics ▪ Reports ▪ Queries
Measurement and monitoring	▪ Risk assessment ▪ Risk management ▪ Incident/event management ▪ Investigation management ▪ Task calendar and task management
Automation	▪ Business Process Management ▪ Performance Management ▪ Communication and collaboration
Data Management	▪ Content and document management ▪ Data warehouse
Security	▪ Application and user security

Analysis and presentation tools include the GUI, a common "look and feel" for the software, as well as inputs and output screens. Data analytics and decision support tools can reside within the software or can be accessed through integration with commercial applications (e.g., Cognos, Crystal Reports and Hyperion).

Measurement and monitoring functions range from enterprise-wide processes to collecting, aggregating and correlating information. Automation of business processes can include Business Process Management and Performance Management features.

Automation should enable business process work flows and task progression, important in addressing risks related to each step in the information flow. HSE subject matter experts, not the software vendor, should define the business process workflows.

Data Management should include a single database instance to house HSE and supporting data—for example, number, type and description of HSE and quality incidents; HSE audit follow-up action items and status; greenhouse gas emissions, and rolled-up data from process historian systems. Data management may include separate document and content management storage, separate from the application software, business rules and presentation layer.

Security must prevent intrusion into the database by unauthorized users and should include an audit trail that records who changed what data, and when.

THE VALUE OF ERM SOLUTIONS

Many companies see the value of using Enterprise Risk Management software to enhance competitiveness, increase productivity and sustain the business when serious events crop up. ERM software solutions for HSE provide many advantages, helping companies to

- Identify and evaluate risks and opportunities
- Streamline and standardize risk management processes
- Attain visibility into near real-time data, for better decision-making
- Achieve information transparency
- Standardize performance metrics across sites, business lines and enterprise
- Reduce the cost of fines, litigation, penalties, and insurance premiums associated with incidents and events
- Improve the effectiveness of compliance management processes
- Reduce costs and ease the process of certifying to international standards
- Reduce the cost of materials, wastes, emissions, and energy
- Improve corporate image and brand reputation
- Ensure business continuity

> *Enterprise risk reduction is growing as a fundamental priority across industries. Major companies have already adopted a solution and are seeing greater returns and accomplishing more of their strategic objectives by doing so.*
>
> —Trent Derr, President & CEO, Syntex Management Systems, Inc.

One of the most important benefits of an ERM solution is the transparency it provides. Reducing variability in the organization's processes and documenting the data trail produces more predictable financial and operational results—the ultimate desired outcome.

It is not enough to identify and measure an organization's risks. Companies should also extract leading indicators from the data to provide a road map to continually measure and execute improvements in key areas such as culture and process that drive risk reduction performance.

An ERM solution has financial impacts on both revenue and net income, because ERM is as concerned with revenue growth (opportunity) as it is with loss prevention. The basis for this expanded opportunity is the premise that an ERM initiative enabled by improved management system execution will increase the effectiveness of risk mitigation, reduce process variability and enable the company to accomplish strategic objectives.

CONCLUSIONS

Organizations make decisions every day, balancing risks and rewards—but often lack accurate, timely, trustworthy information. Often, the processes and systems that help to manage obligations are fragmented and variable.

A well thought-out ERM initiative, supported by time-tested enterprise software, can provide better insight into Operational Risk. Companies that take a holistic ERM find that "point" solutions are temporary measures, at best. Enterprise Risk Management is strategic, requires senior management support and a "risk culture" that considers both risks and opportunities. It takes into account the company's risk appetite and risk portfolio, transcending departments, functions, business lines, geography and time.

Companies that lack staff resources and budget for ERM software should address the most pressing issues, keeping the future in mind. They should implement a software package that meets current high-priority needs, and also has capabilities that address enterprise-wide needs.

Often, organizations seeking strategic risk management solutions find only tactical software. Many risk management software providers have not caught up with HSE market needs, though a few vendors do provide ERM software for HSE. This software is flexible, scalable, configurable and relatively user-friendly, helping businesses identify and evaluate risks and opportunities, drive continuous enterprise-wide improvements and ensure business continuity. ERM solutions enable companies to meet strategic objectives, increase revenue and net income.

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She earned an M.S. in Environmental Management from the University of San Francisco, an A.B. from Miami University and completed the Rice Program for Managers. She is a Qualified Environmental Professional and is listed in *Marquis Who's Who in America* and *Who's Who in the World.*

ABOUT LEXICON SYSTEMS, LLC

Lexicon Systems, LLC is an independent, woman-owned consulting firm with headquarters in Houston, Texas. The firm offers distinctive skill sets that help to bridge the gap between business issues and information technology. Lexicon's consultants team with clients to provide results-oriented systems and solutions that fit the way they do business.

Practice areas include Technology Consulting, Business Planning and Strategy; Strategic Product and Services Marketing and Project Management and Execution. For further information, call +1 281.280.8106, send an e-mail to Info@Lexicon-Systems.com or visit www.Lexicon-Systems.com.

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