

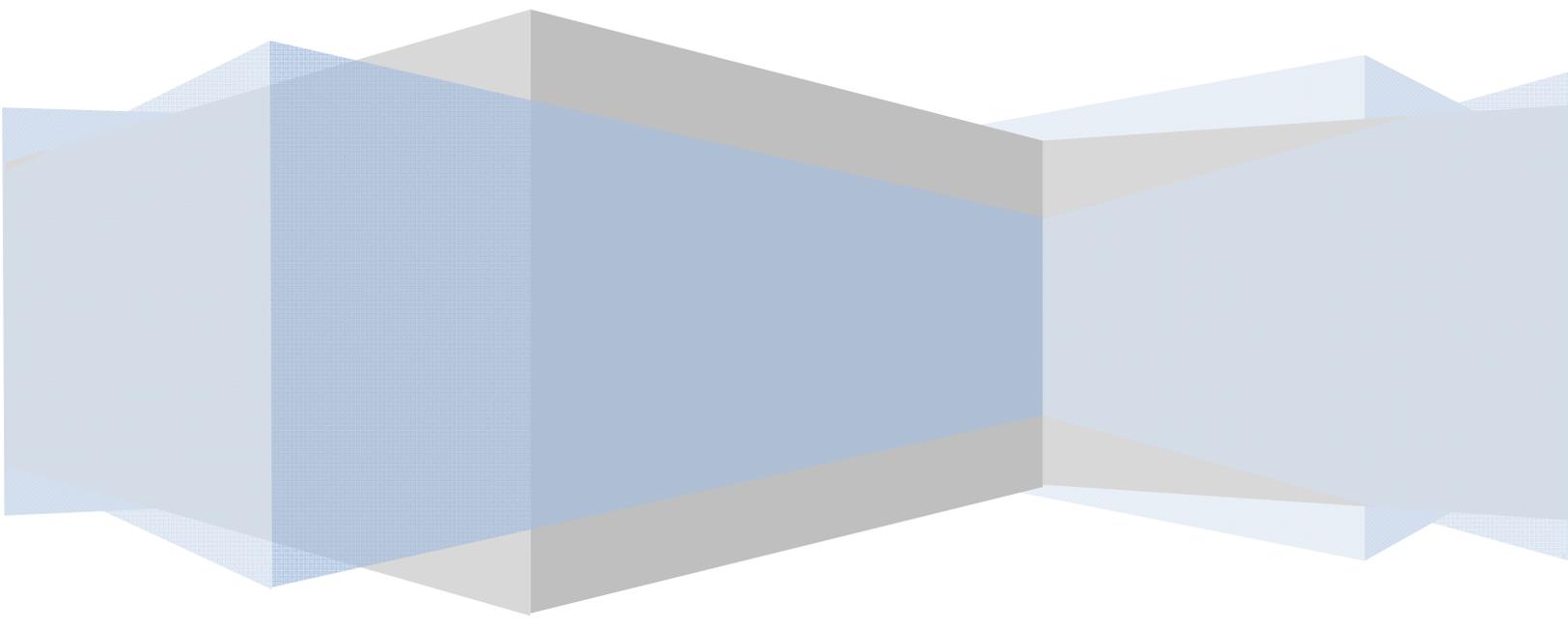


uOttawa

L'Université canadienne
Canada's university

RISK MANAGEMENT MANUAL

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i. Preface

Risk is all around us. We cannot, and should not, avoid all risks. Instead, we need to take appropriate risks knowingly and manage them. For activities at the uOttawa, this means that risk is anything that may cause an activity to fail to meet its goals and objectives. Managing risk is a central part of any activity at uOttawa and requires identifying and controlling the exposure to risk that threatens the successful delivery of the identified goals.

Risk management is not a new practice; it is time-honoured (although sometimes neglected) part of organizational development and review procedure, and a proper appreciation of potential risks is essential to the continuing success of any organization.

a) Purpose of Manual

This Risk Management Manual provides the framework to decrease the frequency of incidents and to also reduce the impact of incidents if they do occur, while balancing this with taking risks.

It is the policy of uOttawa to preserve the assets of the institution and protect the physical well being of students, employees, and the general public involved in activities occurring both on and off campus. Preservation of assets and protection of personnel is a responsibility of each Faculty and Service. Faculties and Services must, therefore, manage those exposures to risk which could destroy or deplete their assets or cause harm to persons by following this manual's guidelines.

This Manual shows a structured approach to assist our employees in decision-making. At the organizational level, it will help Faculties and Services to integrate risk into their decision making process(es). At the individual level, it will help all the University of Ottawa employees and students to develop new skills and will strengthen their ability to anticipate, assess and manage risk. This Manual is intended to provide an overview of some of the key points of risk management rather than a comprehensive treatise on the subject.

b) Intended audience

The Manual is intended for those who are responsible for controlling (fully or partly) one of the University's significant risks. No prior knowledge or experience of risk management is assumed.

c) Structure of Manual

The following topics are covered in this Manual:

- Chapter 1: Introduction to Risk - an overview of what is risk and why risk management is so critical at uOttawa
- Chapter 2: Risk Management Process - explains the key processes involved in effective risk management

- Chapter 3: Risk Assessment - a detailed review of how to identify risks in your operations or projects
- Chapter 4: Risk Management - how to prioritize and plan your risks to maximize your efficiency at managing your risks
- Chapter 5: Internal Control & Audits - how to make sure that your risk management goals are being met through controls and self-assessment methods

In addition, there is a detailed section on modeling in the annex.

d) Other Resources

There are two Risk Management courses available at the uOttawa campuses for further training on the Risk Management techniques discussed in this manual. For information on courses offered by Centre for Organizational Development and Learning please visit <https://web30.uottawa.ca/hr/web/codl>. For information on Continuing Education courses, please visit: <http://www.sfp-pts.com/english/index.cfm> Risk Management is also briefly discussed in the 'University at a Glance Course', which is mandatory for all new employees.

e) Revisions

This is the second edition of the uOttawa Risk Management Manual however all future editions will list their revisions here.

f) Production of the Risk Management Manual

The Office of Risk Management (ORM) is primarily responsible for the production of this manual. ORM will develop and co-ordinate updates to the manual as required, based on uOttawa policy changes and stakeholder feedback. To provide feedback to ORM on this manual, please contact us at any of the following co-ordinates:

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Kindly address all correspondence to the "Risk Management Group".

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Chapter One: Introduction to Risk

1.1 Overview

Having a common language for Risk Management allows Managers to communicate with each other to compare notes and offer helpful advice. Without a common language, it is very difficult to compare notes between diverse operations such as event planning and finance or a chemistry lab and a student radio station.

In this chapter the following items are covered:

- key terms in risk management
- relationships of those key terms
- mathematical definition of risk
- the importance of risk management

1.2 What is Risk?

Risk is unavoidable and present in virtually every human situation or activity. It is present in our daily lives, as well as in all uOttawa's activities. Risk cannot completely be avoided, nor should it be. To make advances, risks must be taken, but these risks should be managed to reduce the likelihood of their occurring too frequently or severely. It would be useful to describe risk in terms of its external appearance. In this respect, risk has two key attributes:

- Uncertainty, not only in terms of its probability (or frequency) of occurrence but also in terms of its timing and impact.
- Some form of loss to one or more of the stakeholders, defined as an outcome that falls short of what was expected.

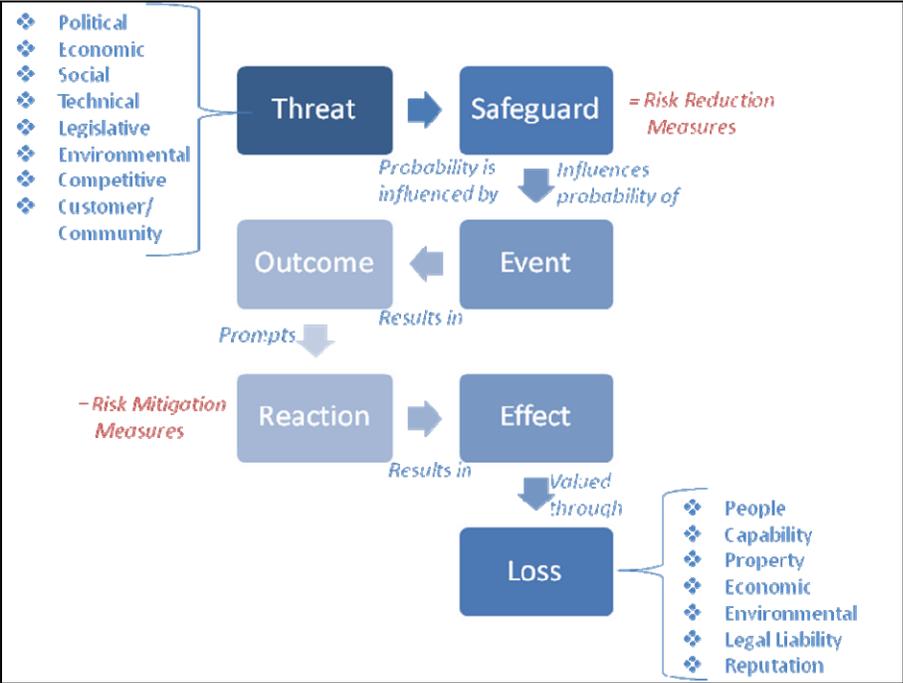
When stakeholder expectations are recognized and defined, they become formal goals and the effect of risk can be measured in terms of the degree of failure to achieve those goals. Incorporating the concept of stakeholders, goals and potential loss, we can use the definition:

Risk is defined as any threat that, if it occurs, may prevent the activity's objectives from being achieved in whole, or in part.

Risk is an uncertain outcome. Risk does not represent only negative events. For example in enrolment rate risk, the enrolment rate can increase or decrease; one would have a positive and one with a negative impact.

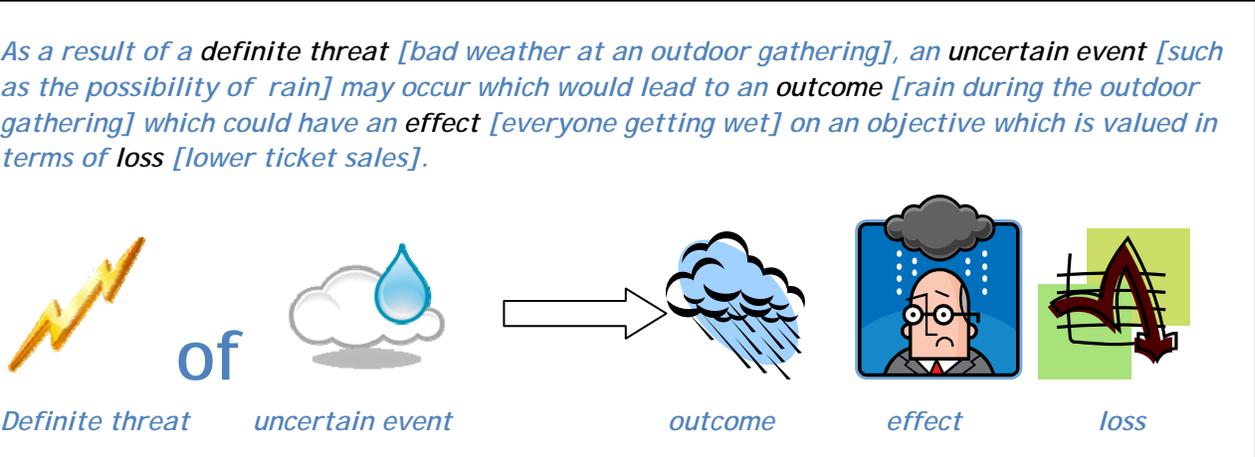
A number of general threats or risk factors that have the potential to cause harm can be identified. The chain connecting threats to potential losses is illustrated in Figure 1.2.1.

Figure 1.2.1: Relationship between threats and potential losses



This sequence of events connects the significant elements of risk and risk management and can be described as follows in the figure below.

Figure 1.2.2: Sequence of Events Descriptions



The probability of the *threat* [getting lost on the way to the meeting] is modified by a *safeguard* (risk reduction measure) [taking along a GPS device] which reduces the probability of an *event* [being late to a meeting] occurring.



The *outcome* [flat tire] may prompt a *reaction* (risk mitigation measure) [activating roadside assistance plan] that reduces the *effect* [delay in travel] and hence the *loss* [number of minutes late].



Typical threats and losses are listed below in Table 1.2. While these are not the only threats and losses, this approach does capture the most significant of the potential losses and hence the issues that ought to be of critical interest to managers.

Table 1.2: Typical Threats and Losses

Threats	Losses
<ul style="list-style-type: none"> • Technological <ul style="list-style-type: none"> ❖ Design, quality • Legislative <ul style="list-style-type: none"> ❖ New Legislation • Natural <ul style="list-style-type: none"> ❖ Earthquake • Competitive 	<ul style="list-style-type: none"> • Economic <ul style="list-style-type: none"> ❖ Cost increase • Environmental <ul style="list-style-type: none"> ❖ Contamination • Legal Liability <ul style="list-style-type: none"> ❖ Legal claims • Reputation

Threats	Losses
<ul style="list-style-type: none"> ❖ Competitor activity • Customer/Community ❖ Customer relations 	<ul style="list-style-type: none"> ❖ Public Image

"Prediction is very difficult, especially about the future".
Neils Bohr

Risk exposure is generally measured in financial terms, though other factors such as reputation, social responsibility, and the environment are also adversely affected by risk.

The highest risks are generally those with the highest probability and the highest impact, although events with very low probability but an extreme impact have to be treated with particular attention due to their potentially catastrophic effect on the organization.

Risks can only be assessed if their probability of occurrence and their impact have been properly identified. Risks can then be sorted in order of importance, and management attention focused onto those at the top of the list.

You can't manage what you can't measure.

1.3 Why is Risk Management Important?

Risk management is a systematic approach to setting the best course of action under uncertainty by identifying, assessing, understanding, acting on and communicating risk issues. The ultimate goal of risk management is the preservation of the physical and human assets of the organization for the successful continuation of its operations.

The purpose of risk management is to:

- Protect the organization from severe financial disruption due to accidental losses, and
- Do so at a cost that is affordable and does not fluctuate significantly from year to year.

Underlying risk management objectives include protecting assets from loss or destruction, creating a safe work environment for employees, students, and reducing the likelihood of injuring or damaging a third party.

In its mission statement, uOttawa is pledged to quality of the highest standing in all the teaching programs and research undertakings of its academic and professional sectors. From this, it follows that the objective of the Office of Risk Management is to maintain smooth operations and peace of mind in the face of risk, as well as an environment that promotes safe and enjoyable learning.

As risk management is directed at uncertainty related to future events and outcomes, all planning exercises should encompass some form of risk management. There is also a clear implication that risk management is everyone's business, as people at all levels can provide insight into the nature, likelihood and impacts of risk.

Good risk management practices lead to the following potential benefits:

- Increased focus on the achievement of specific strategies - Risk management will highlight areas in which objectives are unclear or fail to link with the University of Ottawa's corporate strategy
- Improved awareness and control of risk
- Improved compliance with external requirements and internal policy
- Increased assurance that there are 'no surprises'
- Greater institutional awareness of the benefits of safe risk-taking.

Without risk management, there is a real possibility that serious financial and non-financial damages could be caused to the University of Ottawa because avoidable risks were not identified and managed.

Murphy's First Law

If it can happen, it will.

Chapter Two: Risk Management Process

2.1 Overview

Risk management consists of five phases that run in an iterative loop to continuously improve the management system by incorporating lessons learned and feedback from stakeholders. There are also eight distinct processes that are used to run and develop a continuous risk management system - these processes range from setting up an infrastructure to managing a crisis. The two most important process tools in this series are risk assessment and risk management; they are used repeated throughout the development of a risk management system. A relatively newly evolved form of risk management is called enterprise risk management; this system takes the discipline of risk management to a strategic level within an organization. This ensures that instead of individual risks, the risks are seen in the larger context of the business strategy and addressed accordingly.

2.2 Risk Management Process Phases

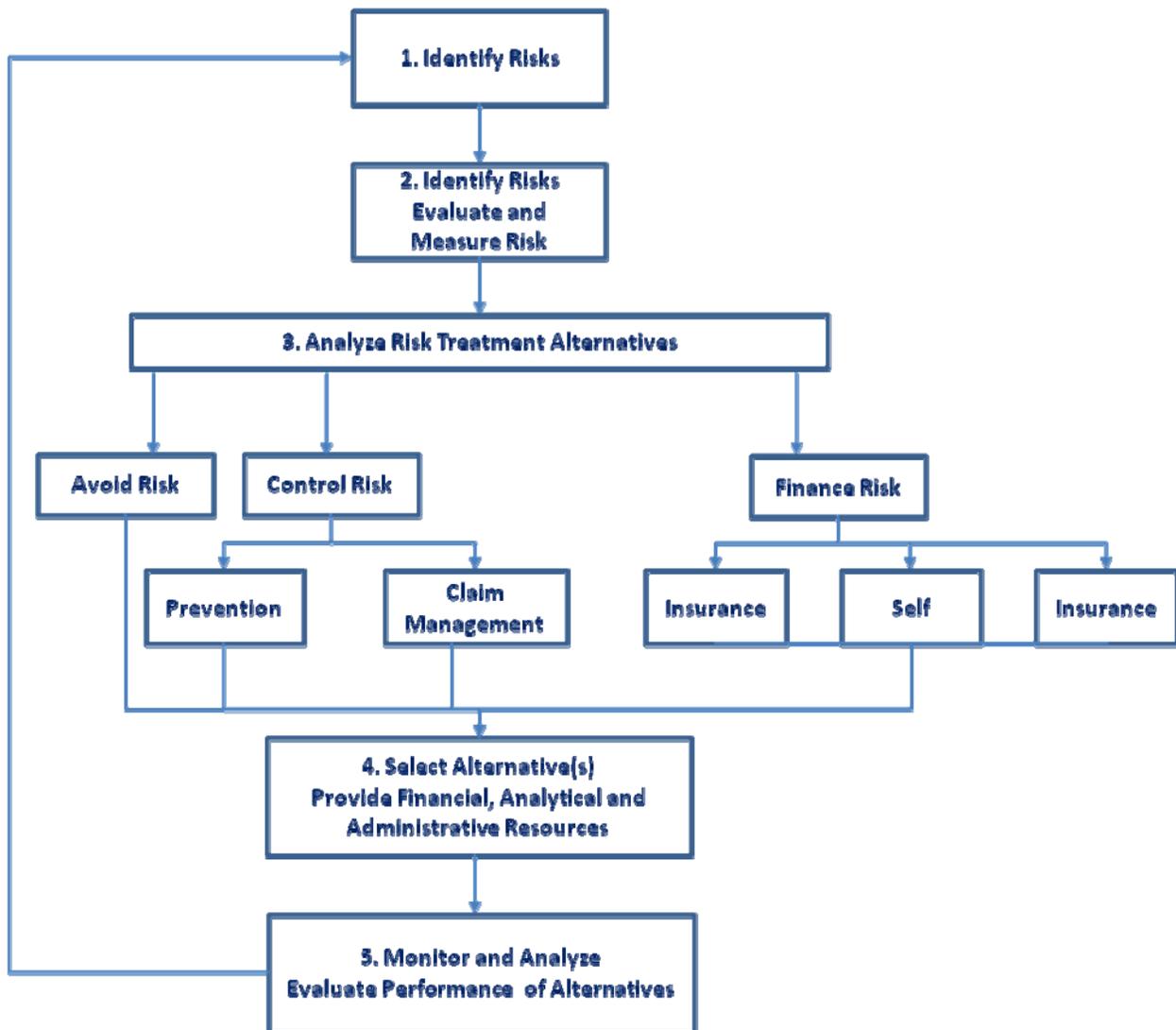
The process of Risk management can be broken down into five phases; while each of these phases needs to be done, the extent to which it is explored should be appropriate to the nature and scope of the activities in question.

To better understand these five phases, each is broken down into a main question, as follows:

- 1 *Risk identification* -- What types of accidental losses can the organization incur?
- 2 *Risk measurement and evaluation* -- How likely is a loss to occur and how much will the damage be?
- 3 *Analysis of risk treatment methods* -- How can the organization protect itself from these losses at an affordable and stable cost?
- 4 *Selection and implementation of treatment method(s)* -- What combination of risk avoidance, control, and financing will yield the best result?
- 5 *Monitoring performance of treatment methods* -- Are the methods performing properly, and if not, what alterations can be made to raise their performance?

Figure 2.2 shows the cyclical flow of these 5 phases.

Figure 2.2: The Risk Management Process



One important rule of risk management is to start working on the risks at the earliest possible opportunity. That is usually when the greatest impression can be made with the lowest cost. There are two main opportunities:

- a. To work on the causes that will reduce the likelihood of occurrence (*risk reduction*).
- b. To reduce unfavourable impacts (*risk mitigation*).

2.3 Stages and Processes

The four main processes of risk management are:

- Identify Risks
 - Analyze Risks
 - Plan Risk Control
 - Monitor and Control Risks
- } Risk Assessment
- } Risk Management

The following detailed activities and outputs of each sub-process, described in the following table, are also key to successful risk management.

Table 2.3: Risk Management Process Steps

RISK MANAGEMENT PROCESSES		
1	Establish Risk Infrastructure	Create risk management infrastructure for the organization. Define business or project risk management mandate.
2	Review and Define Goals	Review stated business or project goals. Identify and define stakeholders and their association with goals. Identify and define implied expectations.
3	Identify Risks	Identify potential risks in the business or project and the external project environment.
4	Analyze Risks	Transform risk data into decision-making information. For each risk, describe likely impacts and the effect on business or project goals. Estimate risk probabilities. Identify risks to be escalated / delegated within the organization. Identify risks to be transferred outside the organization. Rank the retained risks based on their probability / impact scores.

RISK MANAGEMENT PROCESSES		
5	Plan Risk Control	<p>Identify owners for retained risks.</p> <p>Translate risk information into decisions and present and future mitigating actions.</p> <p>Plan controlling actions for the most significant risks.</p> <p>Prioritize controlling actions based on the impact on reducing risks.</p> <p>Integrate risk planning with technical, commercial and financial proposals.</p>
6	Monitor & Control Risks	<p>Monitor business or project risk indicators.</p> <p>Correct for deviations from the plans.</p> <p>Implement selected controlling actions.</p> <p>Monitor effectiveness of controlling actions.</p> <p>Report on retained risks.</p>
7	Crisis Management	<p>Invoke crisis management actions to handle unexpected events.</p> <p>Monitor effectiveness of controlling actions.</p>
8	Capture Experience	<p>Capture results of risk management program.</p> <p>Use information to learn from experience.</p>

2.4 Risk Assessment

The risk assessment process, involving identification and analysis, must examine critical areas in order to identify all perceived risks from uOttawa's perspective. All risks that have an impact on the University or its ability to fulfill its objectives must be addressed. Identification of loss exposures can be achieved before a loss occurs through the use of surveys of operations, inspection of facilities, and questionnaires. The risk assessor must analyze the variety of property, liability, income, and personnel exposures in the activity. The risk impacts are likely to include at least:

- Performance
- Cost
- Timescale
- Safety

- Reputation

Measurement of loss exposures through analysis of the probable frequency and severity of loss can help to reduce the uncertainty involved and lead to corrective action.

2.5 Risk Management

Management of risk involves the implementation of risk reduction and mitigation measures and dealing with unforeseen risks in a thorough manner. The manager of the risks will require the following in order to manage the risks effectively:

- a. Timely, accurate and complete management information.
- b. Resources (money, time, manpower, equipment etc).
- c. Effective control and the authority to use it.

If necessary, alternative risk management tools or remedies exist for every exposure that the University of Ottawa faces. These include:

1. Risk Avoidance--eliminate the exposure completely.
2. Risk Control--reduce chance or size of loss, or make the likelihood more certain.
3. Risk Transfer--via insurance or contract.
4. Risk Retention--decide to bear the risk at an acceptable level.

Since the University of Ottawa is self-funded for many of the various exposures, it is in our best interest to use risk control, risk avoidance and risk transfer as much as possible to reduce the cost of retention.

At the regular risk reviews, the effectiveness of the risk management will be analyzed, any shortcomings identified and corrective action initiated. Regular risk reports should be provided to higher levels in the University. These should include a summary of the risk register and reports on action to manage key risks.

2.6 Enterprise Risk Management

Enterprise Risk Management (ERM) is a relatively newer approach to risk management. The differences between ERM and traditional Risk Management are outlined in detail in Table 2.6, but first here is a description of what ERM entails.

ERM is the identification and management of all the risks within the organization. This term is an umbrella term that covers the integration of risk management from different parts of an organization. The Casualty Actuarial Society defines ERM as: "the discipline, by which an organization in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organization's short- and long-term value to its stakeholders."

Implicit in this definition is the recognition of ERM as a strategic decision support framework for management. It improves decision-making at all levels of the organization.

Table 2.6 Traditional Risk Management versus Enterprise Risk Management Differences

Traditional risk management	ERM
Risk as individual hazards	Risk in the context of business strategy
Risk identification and assessment	Risk portfolio development
Focus on discrete risks	Focus on critical risks
Risk mitigation	Risk optimization
Risk limits	Risk strategy
Risk with no owners	Defined risk responsibilities
Haphazard risk quantification	Monitoring and measuring of risks
“Risk is not my responsibility”	“Risk is everyone’s responsibility”
Source: KPMG LLP.	

At the University of Ottawa, the Enterprise Risk Management Policy (policy 54) formalizes the University’s risk management program and articulates the roles and responsibilities of everyone from the Board of Governors, management, employees and relevant committees.

The University of Ottawa is in the process of developing a formal risk management framework that will be applied to the University as a whole. This will involve the identification and evaluation of risks, the development of risk reduction and mitigation measures, as well as the verification of the effectiveness of these measures. As additional details of this program are developed, they will be communicated to the University Community.

The University has an Enterprise Risk Management plan which addresses risks to the University as a whole, such as:

- Competition
- Catastrophic Event
- Change Readiness
- Financial
- Human Resources and Labour Relations
- Leadership
- Partnering
- Physical Infrastructure

- Reductions in Government Funding
- Reputation
- Student Enrolment (both Undergraduate and Graduate Studies) and Satisfaction
- Technology

An Enterprise Risk Management Committee has been formed at the University with the mandate to ensure that the appropriate measures are implemented to protect the property, assets and people of the University by mitigating potential risks of loss, damage and injury. Some of the other responsibilities of this committee include:

- Overseeing the Enterprise Risk Management Program, recommending changes and providing direction as required;
- Reviewing and approving the University Risk Register;
- Reviewing Risk Registers compiled by the Faculties and Services;
- Review (upon request) the risks of an unusual, particularly hazardous or complex nature

The committee consists of a Chair and eight additional members representing Legal Counsel, Vice Presidents, the Internal Audit department and the Office of Risk Management.

2.7 Keys to Successful Risk Management

Risk management is an essential tool necessary to protect an organization from the potentially serious effects of inadequate provision for risks that should have been foreseen. A lack of awareness of all the factors might have an adverse impact on the organization. The following table identifies the key risk management activities.

Table 2.7: Key Risk Management Activities

Support Activities	
Scope	<p>Organizational goals will be identified and the risk management policy and procedures defined.</p> <p>Associated risks will be managed, regular risk reviews undertaken and contingency plans reviewed and updated. Managers will be responsible for managing the risks to which the University of Ottawa is exposed.</p> <p>At regular intervals, a risk review will be performed to document the experience of the management team and to learn any lessons from their experience and from the current financial performance.</p>
Process	<p>Stakeholder analysis</p> <p>Risk identification and assessment.</p> <p>Detailed risk analysis and planning.</p>

Support Activities	
	Crisis planning.
Purpose	Definition of organizational goals Definition of policy and procedures Management of operational risks Review of operational risks Update contingency plans Risk budgeting
Method	Continuous management Regular review of risks and responses Project reviews Review of policy and procedures Review of crisis management plan Risk modeling.
Performed by	Managers Management team Office of Risk Management
Mandatory Outputs	Organizational goals Risk management policy and procedures. Risk register. Crisis Management Plan. Financial provisions. Documentation of experience.
Decisions	Activation of contingency plans (if necessary) Initiate additional risk assessment activity if required. Revise risk management policy/procedures (if required).

A continuous risk management process which will identify and assess risks to the University of Ottawa and take appropriate action to ensure that our organizational goals are achieved is the key to successful risk management.

Chapter Three: Risk Assessment

3.1 Identifying the project scope

Clearly, the scope of the project is important to guide all the subsequent steps. If a project is defined too broadly, there will be broad risks that cannot be effectively managed. Conversely, too narrow a project scope may exclude risks that should be managed.

3.2 Risk Assessment Overview

Risk assessment involves the identification and description of all potential risks and the evaluation of the associated likelihood of occurrence and impact. This chapter describes the risk assessment process, how to identify and describe risks, risk assessment scoring (inherent and residual) and the appropriate documentation of a risk assessment.

As part of the risk assessment process, a series of questions about the activity and its risks need to be asked. The table below lists the typical questions and the processes involved.

Table 3.2: Comparison of Questions and Process Steps in Risk Management

Question	Process
Activity definition	
<ul style="list-style-type: none"> Where are we going and why? 	<ul style="list-style-type: none"> Goal Identification
<ul style="list-style-type: none"> Who has an interest in our activity? 	<ul style="list-style-type: none"> Stakeholder Analysis
<ul style="list-style-type: none"> How are we going to get there? 	<ul style="list-style-type: none"> Strategy Development
<ul style="list-style-type: none"> Are there other (better) ways? 	<ul style="list-style-type: none"> Option Development
<ul style="list-style-type: none"> What is critical to the success of our activity? 	<ul style="list-style-type: none"> Critical Success Factor (CSF) Identification
<ul style="list-style-type: none"> How will we know we are getting there? 	<ul style="list-style-type: none"> Key Performance Indicator (KPI) Identification
Risk Identification	
<ul style="list-style-type: none"> What must go right? 	<ul style="list-style-type: none"> Management
<ul style="list-style-type: none"> What might prevent us from getting there? 	<ul style="list-style-type: none"> Risk Identification
<ul style="list-style-type: none"> What are the likely warning signs? 	<ul style="list-style-type: none"> Risk Indicators
<ul style="list-style-type: none"> What will improve our chances of success? 	<ul style="list-style-type: none"> Risk Reduction
<ul style="list-style-type: none"> What will we do if things go wrong? 	<ul style="list-style-type: none"> Risk Mitigation
<ul style="list-style-type: none"> Could things go better than expected? 	<ul style="list-style-type: none"> Opportunity Identification

Instead of asking "What can go wrong?" during risk identification, try using the question "What must go right?" to focus on the Critical Success Factors to achieving the goals. Key Process Indicators might then provide the early warning indicators of emerging or changing risks.

Having been identified, the risks can then be ranked into order of importance, and for the most significant risks, possible mitigation options can be identified and their costs and benefits estimated. The tolerability of each risk can then be determined.

Risk assessments fall into two generic categories:

- A. Qualitative: A broad, non-numeric assessment of the probability and impacts of individual risk.
- B. Quantitative: A detailed numeric assessment based on estimates of probable cost and timescale, generally supported by some form of risk modeling.

Each of the five components will need to be discussed in more detail. It is important to maintain a balance and ensure the processes undertaken are appropriate to the nature and scope of the project - for example, it would not be appropriate to produce a 100 page risk management plan for re-painting a room, nor is it sufficient to consider risks at only one meeting during the implementation of an Enterprise Resource Program (ERP).

3.3 Risk Identification

Risk identification involves documenting the conditions and events that represent any potential threats to the University’s achievement of its objectives or represent areas to exploit for competitive advantage. It entails the following steps:

1. Defining problems, opportunities, scope, context (social, cultural, scientific evidence, etc.) and associated risk issues.
2. Deciding on necessary people, expertise, tools and techniques (e.g., scenarios, brainstorming, and checklists).
3. Performing a stakeholder analysis (determining risk tolerances, stakeholder position, and attitudes).

Here are a few items to help start the identification process:

Table 3.3 Risk Identification Considerations

Topic / Impact Area	Typical Question
Management	What is the likelihood of a failure of the management process?

Topic / Impact Area	Typical Question
Technical / Service Performance	What failures could occur in the technical performance of the system or in the service delivery?
Resources	Are the necessary resources (labour, material, assets) available to undertake the proposed work?
Compliance	What is the likelihood of failure of the quality, health and safety, environmental protection or other compliance procedures?
External Issues	Could the project be affected by political decisions, changes in legislation or other external events?
Contractual	Typically, performance, costs and timescale commitments to the customer.
Operational Capability	Loss of operational capability to deliver educational services.
Reputation	Loss of organizational reputation.

3.3.1 Identification Techniques

Although some risks may be obvious to people familiar with a specific process or operation, some are not so easy to find. Some of the techniques that can be used in the risk identification process include:

- Brainstorming
- Structured interviewing
- Questionnaires
- Subject Matter Experts
- Previous project experience

Once you have obtained all of the relevant information about the risk, you can better determine if you are dealing with the effects of a risk (increase in costs to run a film photographic workshop) or its underlying cause (the cost of the processing chemicals due to prevalence of digital methods).

During this initial phase of risk identification, use the "no rules, no judgment, no problem solving" approach to stimulate ideas and plan ahead.

3.4 Describing Risk

A precise description allows for assigned Risk Management Practitioners to determine exactly what the threat is and what the likely impacts could be. This method also enables them to communicate their results clearly.

A risk description of the form below can be used in conjunction with possible statements described in Table 3.4 later.

Figure 3.4: Sequence of Events Descriptions

*As a result of a **definite threat** [such as the potential of an accident during a human subject research experiment] an **uncertain event** [an accident cancels the experiment due to the investigation] which could lead to an **impact** [experiment is permanently cancelled due to investigation findings and pending lawsuits] on business objectives*



Definite Threat



Event



Impact

Table 3.4: Examples of Risk Descriptions

Articulation of Definite Threats	Articulation of Potential Events	Articulation of Potential Impacts
<ul style="list-style-type: none"> • Political • Economic • Social • Technological • Legislative • Environmental • Competitive • Customer/Community 	<ul style="list-style-type: none"> • Failure to ... • Loss of ... • Non-Compliance with • Lack of ... • Reduction of ... • Conflict between ... • Inability to ... • Inappropriate ... • Reliance on ... • Disruption to ... • Inadequate ... 	<ul style="list-style-type: none"> • Death and/or injury • Missed opportunities • Loss of assets • Service disruption • Impaired quality • Contamination • Loss of contract • Erosion of margin • Financial cost • Damaged reputation • Fines and penalties

Articulation of Definite Threats	Articulation of Potential Events	Articulation of Potential Impacts
	<ul style="list-style-type: none"> • Increase in ... • Delay to ... 	<ul style="list-style-type: none"> • Litigation • Inefficiency • Customer dissatisfaction

3.5 Risk Analysis Probability and Impact

The risk analysis process requires some form of measure of both the probability that the risk will occur but also its possible impact on the achievement of organizational goals. These will normally include, but not be limited to:

- ❖ Performance
- ❖ Cost
- ❖ Timescale
- ❖ Operational Capability
- ❖ Company Reputation

A risk scoring system is a convenient method of prioritizing risk probability and impact. The risk scoring system described here is based on the Institution of Civil Engineers/Institute of Actuaries' Risk Analysis and Management for Projects (RAMP) methodology. Each risk is classified into one of five "probability" categories according to its probability of occurrence and is then classified into one of five "impact" categories according to the severity of the consequences if the risk occurs.

Table 3.5.1: Probability Categories

Probability			
Descriptor	Scenario	Probability	Score
Very Low	Not Expected to Occur	<1%	1
Low	Small Likelihood	1-20%	2
Medium	Occurs quite often	21-49%	3
High	Common Occurrence	50-85%	4
Very High	Very Frequent	>85%	5

The impact assessment should take into account performance, cost, timescale and public reputation. For example in service contracts, where performance level and quality is measured over a long period of time, the impact on performance can be broadly quantified by addressing the potential impact of a threat on the level and quality of service, and the duration and extent of that effect.

Table 3.5.2 Impact Categories

IMPACT

Descriptor	Financial (1000's)	Regulatory	Injury	Environmental	Reputational	Building	Operational	Score
Negligible	0-\$25	non-compliance with Standard /Guidelines	no injury or illness possible	Minor or localized internal impact and internal clean- up crew	negative internal impact, short term	Disrupts single area's operation, but normal functions able to resume quickly	non-key functions disrupted for short term	3
	0-\$49							5
Marginal	\$50, -75	non-compliance with Internal Policy	first aid	Minor or localized external impact and internal clean- up crew	negative internal impact, long term	Disrupts operation of a floor, but normal functions able to resume quickly; or disrupts operations of a single lab for longer periods	non-key functions disrupted for long term	6
	\$75, -100							7
	\$100+ - 175							8
	\$175+- 250							9
	\$50 -\$249							10
Substantial	\$250-350	potential violations of Acts/ Regulations / permits / certificates / licenses	critical injury possible	Serious external impact and external cleanup crew, required notification to authorities	negative external impact, short term	Disrupts operation of a bldg but normal operations resume quickly; disrupts operations of a floor; extensive renovations to an area	single key functions disrupted for short term; widespread non-key functions disrupted for long term	11
	\$350+ -500							12
	\$500+ -750							13
	\$750+ , - 999							14
	\$250- \$999							15
Severe	\$1,000- \$10,000	regulatory action likely with significant long term impacts	fatal injury possible	Significant external impact requires external crew & has long lasting impact requiring authority and community notification	negative external impact, long term	Disrupts more than one bldg; replacement of one bldg	multiple key functions disrupted for short term; one key function disrupted for long term; risk of not being able to carry	20

Descriptor	IMPACT							Score
	Financial (1000's)	Regulatory	Injury	Environmental	Reputational	Building	Operational	
							out the University's mission	
Disastrous	>\$10,000	repeated regulatory actions likely with significant long term impacts	multiple fatal injuries		significant negative external impact, long term	wide scale disruption of more than one bldg for longer periods, replacement of multiple bldgs	multiple key functions disrupted for long term; not able to continue to carry out University's mission for the short term	25

The highest performance impacts are scored where the level and quality of service are affected for the longest time for the maximum number of service customers.

The table below provides descriptions relating to the five impact categories defined above, beginning with the highest priority impacts.

Table 3.5.3 Impact Descriptions

Impact Assessment	Description
Very High	<ul style="list-style-type: none"> The organization is likely to be rendered dysfunctional. Operational performance would be compromised to the extent that the organization is unable to meet obligations and liabilities in core areas. The strategic interests of the organization would be severely affected. Multiple deaths/serious injuries are likely. Very severe environmental damage is likely The organization would incur very large financial losses. The interests of shareholders would be severely affected. Major adverse repercussions could affect large sectors of the organization, its customers and / or the general public. Recovery from such consequences would take a considerable time and may not be achievable.
High	<ul style="list-style-type: none"> Operational performance of the function would be severely affected with the organization unable to meet a substantial proportion of its obligations and liabilities.

Impact Assessment	Description
	<ul style="list-style-type: none"> • The organization's asset / resource base may be significantly depleted. • The organization would be unable to meet key financial targets that would affect strategic interests. • Serious injuries are likely. • Serious environmental damage is likely • The delivery of services to customers would be severely affected. • The interests of shareholders might be affected. • Customer or public reaction might result in significant damage to reputation. • Recovery would be time consuming and require detailed corporate planning with resources being diverted from core activity areas.
Medium	<ul style="list-style-type: none"> • Operational performance of the organization would be compromised to extent that revised planning would be required to overcome difficulties experienced by function / activity area. • The organization would experience difficulty in meeting key financial targets that could jeopardize some strategic interests. • The delivery of services to customers would be affected. • Adverse customer or public reaction might result in some damage to reputation. • Recovery from such consequences would additional resources.
Low	<ul style="list-style-type: none"> • Slight inconvenience / difficulty in operational performance of function / activity. • Some accountability implications for the function / activity area, but would not affect the organization's ability to meet key financial targets. • Some minor effects on the delivery of services to customers. • Public perceptions of the organization would alter slightly, but no significant damage or disruption occurs. • Recovery from such consequences would be handled quickly and without significant additional resources.
Very Low	<ul style="list-style-type: none"> • Operational performance of the function / activity would not be materially affected. • The organization would not encounter any significant accountability implications. • The interests of customers would not be affected. • Public perception of the organization would remain intact.

By locating a specific risk's relative position on the Probability and Impact scales, the risk score can be calculated by the following equation:

$$\text{Risk Score} = \text{Probability Scale} \times \text{Impact Scale}$$

Risks are assigned to one of five Risk Categories depending on the overall significance of the risk to the business as a whole, based on their risk score. The risks with the highest score are then selected for priority analysis.

A suggested basis for determining the overall importance of the risk based on its Risk Score is shown below using the Risk Analysis and Management for Projects (RAMP) categories.

Table 3.5.6: RAMP Risk Categories

RAMP Risk Categories		
Categories	Score	Significance
1	>100	<p>Critical Risk</p> <p>Risks which present a very high threat to human lives and/or property and/or are likely to lead to a very severe financial impact. These risks must be subjected to special measures.</p>
2	60 - 99	<p>Severe Risk</p> <p>Risks which could jeopardize company strategy and/or cause major material and human damage and/or represent a major financial exposure. These risks should be avoided, reduced or transferred.</p>
3	40 - 59	<p>Significant Risk</p> <p>Risks which could injure achievement of company strategy and/or cause significant material and human damage and/or represent a substantial financial exposure. These risks should be reduced or transferred.</p>
4	20-39	<p>Minor Risk</p> <p>Risks which could cause operational problems but which are budgetable and can be managed.</p>
5	<20	<p>Possible Area of Concern</p> <p>Not significant in terms of risk.</p>

3.6 Risk Documentation

Identified risks should be recorded in a risk register (using either a risk database software package or a paper record). A typical risk summary entry might be:

- Risk description: "Failure to meet performance requirements due to inexperienced staff".
- Risk reduction: "Identify existing skills and qualifications and provide additional initial training where required. Provide additional supervision where necessary. Monitor performance of task".

- Risk mitigation: "Early identification of performance failure by monitoring, additional on-job training provided if required".

The following format is a convenient way of documenting risks and identifying the likelihood of occurrence and impact of each risk.

Table 3.6 Example Risk Score

Serial	Risk Title	Responsible Party	Risk Reduction	Probability	Risk Score
	Impact	Interested Party	Risk Mitigation	Impact	
1	Unauthorized activity in tunnel system	Director, Protection	Restrict access, change locks when contractor loses key	LOW Probability	30
	Loss of heating source, loss of network system, injury to intruder	PRS, CCS	Evacuate buildings (winter), use of cell phones and public announcement	SUBSTANTIAL Impact	
2	Debarment from Tri-Council research grants	VP, Research	Clearly communicate all requirements to researchers regularly, audit all requirements that may result in debarment, ethical reviews	VERY LOW Probability	25
	Loss of all Tri-Council research grants for a specified time period	Deans, Finance	Negotiate Tri-Council decision, emphasize commercial research	DISASTROUS Impact	
3	Minor regulatory non-compliance	Managers, Deans, Directors	Proactive communication of regulatory requirements, audits to verify compliance (financial and operational)	HIGH Probability	20
	Minor fine, minor public relations issue	ORM, Internal Audit, Legal Services	uOttawa provides legal defences, internal investigation to ensure event does not re-occur	NEGLIGIBLE Impact	
4	Loss of use of CCS servers	Director, CCS	Regular maintenance, fire protection system installed	VERY LOW Probability	15

Serial	Risk Title	Responsible Party	Risk Reduction	Probability	Risk Score
	Impact	Interested Party	Risk Mitigation	Impact	
	Loss of data, loss of processing capability	Protection, PRS	Off-site storage of data back-up, contract in place to provide off-site processing capability if required, possible use of insurance to off-set costs	SUBSTANTIAL Impact	

Table 3.6 Notes:

- *Risks are for example purposes only, not necessarily accurate*
- *Risk Reduction is a measure put in place to reduce the probability of an event occurring*
- *Risk Mitigation is a measure put in place to reduce the impact of an event*
- *Probability Scoring: Very Low (1); Low (2); Medium (3); High (4); Very High (5)*
- *Impact Scoring: Negligible (5); Marginal (10); Substantial (15); Severe (20); Disastrous (25)*
- *Risk Score Calculation: Risk Score = Probability Score X Impact Score*

For a blank copy of a risk register to use for documenting risks, please see Annex II.

For high risks, a separate risk analysis sheet should be prepared which identifies in more detail the risk management activities to be undertaken to reduce the probability of the risk occurring or to minimize the impact.

The documentation produced as part of the risk assessment forms a valuable record and should be retained as part of the corporate "risk database".

Once the risks are documented, this information can be used to make the risk management system even more effective. A sampling of these steps is described in the following subsections.

3.6.1 Integrate risks

Aggregate all risk distributions, reflect correlations and portfolio effects, and express the results in terms of the impact on the University's key performance indicators.

3.6.2 Assess/prioritize risks

Determine the contribution of each risk to the aggregate risk profile and prioritize accordingly, so that decisions can be made as to the appropriate treatment.

3.6.3 Treat exploit risks

This step encompasses a number of different strategies, including decision to:

- avoid (not do a certain hazardous activity),
- retain (fund the risk out of uOttawa budgets),
- reduce (only offer a hazardous lab course once per year for example),

- transfer (usually through insurance),
- or exploit (take advantage of a likely favourable outcome)

3.6.4 Monitor and review

It is crucial to continuously gauge the risk environment and the performance of the risk management strategies. In order to ensure that the highest priority risks are effectively addressed and no significant new risks have appeared as the project or program advances, it is important to set regular reviews - such as each term for a course or at important milestones for a major construction undertaking.

Chapter Four: Risk Management

4.1 Overview

The real benefits of risk management can only be achieved by active management, which takes account of the identified risks, and any new risks that appear. Risk management involves preparing plans to minimize risk or to mitigate risk impacts and the subsequent monitoring and control of risk during the whole business or project lifecycle.

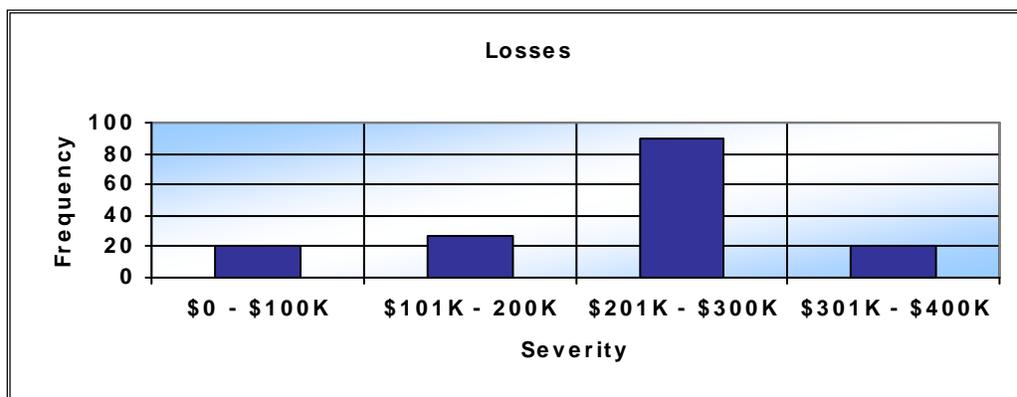
This involves the following concepts:

- Risk Prioritization and Mapping
- Risk Planning
- Responding to Risk
- Managing Opportunities
- Risk Allocation
- Risk Tolerance
- Insurance
- Risk Budgeting
- Risk Monitoring and Control
- Strategies

4.2 Risk Prioritization and Mapping

Risk prioritization is ranking risks on an appropriate scale, such as frequency, severity or both. Risk mapping is the visual representation of risk prioritization. This representation often takes the form of a two dimensional grid with frequency (or likelihood of occurrence) on one axis, and severity (or degree of financial impact) on the other axis; the risks that fall in the high-frequency/high-severity quadrant are typically given highest priority risk management attention.

Figure 4.2.1 Example graph of Frequency versus Severity

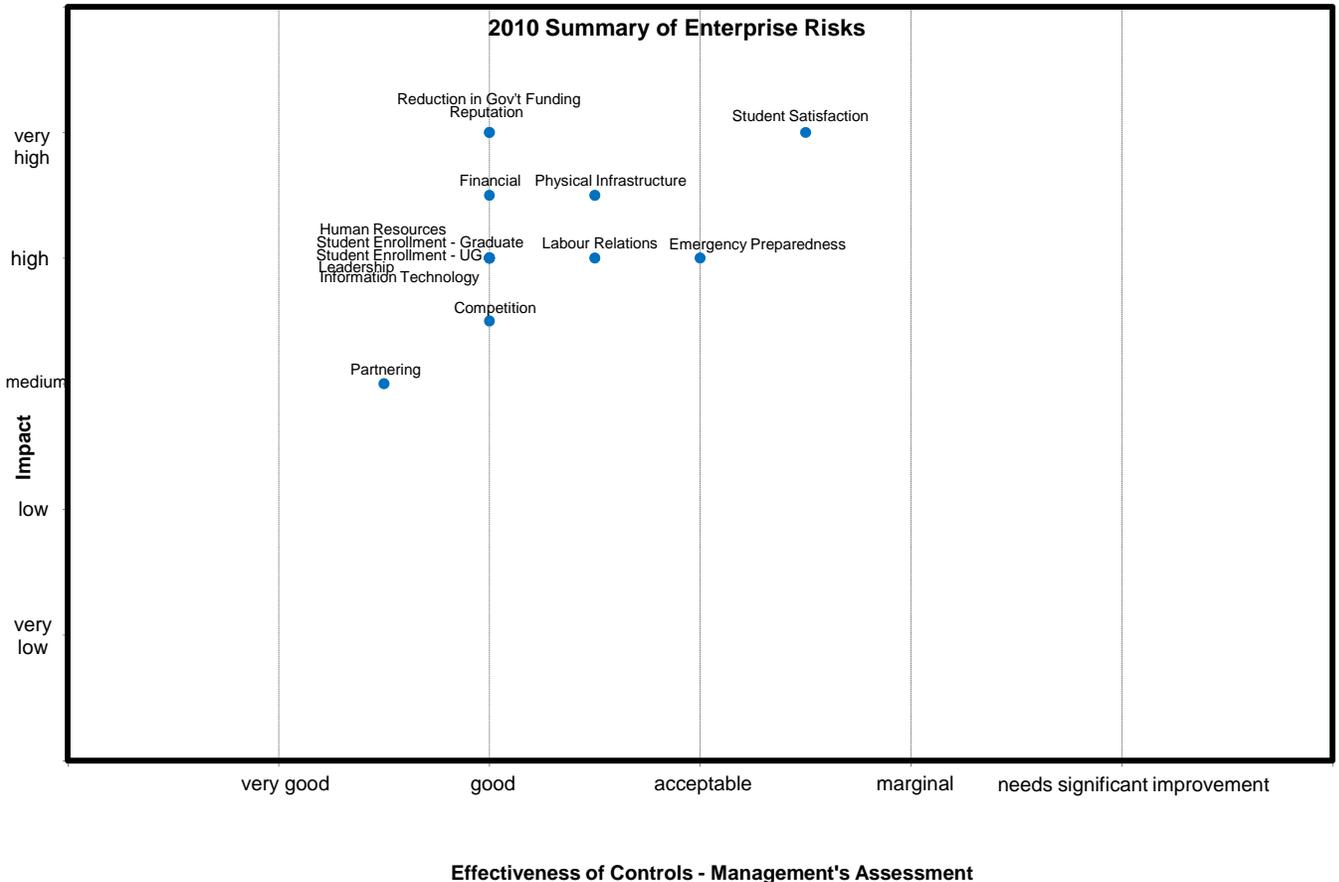


In the
University of

Ottawa's Enterprise Risk Management system, the major risk categories are mapped out in this fashion by taking the potential impact score of each category and plotting it against the

effectiveness of the system’s effectiveness in controlling them. Here is a sample from the 2010 Enterprise Risk Management report.

Figure 4.2.1 Summaries of Enterprise Risks



As can be seen from the figure above, the highest priority items become readily apparent, those in the top right corner!

When simple calculations and qualitative estimates are not enough, the risk management professionals turn to using models to predict the outcomes of catastrophic events. ORM has produced a specialized guidance document on this entitled *'Risk Modelling'*.

4.3 Risk Planning

The purpose of risk planning is to prepare risk reduction and risk mitigation plans; however, the risk planning will also review the efficiency and effectiveness of the various plans and to

what extent secondary risks (risks which result from the contingency, containment or reduction plans themselves) may be involved.

The ability to respond effectively to risks requires the availability of resources and the willingness to apply them.

In order to control risks, it is necessary to be aware of risks and to reduce their probability of occurrence and/or mitigate their effects. Even identifying and documenting risks is part of risk control. Risk planning normally encompasses taking risk reduction actions or having contingency plans ready to be implemented.

Planning is of no value unless that planning is subsequently implemented, though the fact that risk management has been planned may be a significant risk reduction in its own right.

4.4 Response to Risk

A list of possible responses to identified risks is set out below. While these responses may appear to stand alone, in practice this is rarely the case.

- Remove/Avoid - risks that can be eliminated or avoided and therefore no longer pose a threat.
- Reduce - risks that can be decreased by taking certain actions immediately.
- Transfer - risks that can be passed on to other parties. (Note that this does not normally eliminate the risk, merely passes it on to someone else). Transfers may occur between customer and supplier or between different levels within the same organization.
- Mitigate - risks that can be mitigated by taking contingency actions should they occur. A fall-back plan should detail the alternative course(s) of action should a risk materialize. Fall-back plans will have risks associated with them, and thus must also be subject to risk assessment, analysis, planning and management.
- Accept - the benefits that can be gained from taking the risk outweigh the penalties of alternative approaches.
- Ignore - ignore risks altogether and hope they will go away (the Ostrich Option). This option should have no place in a management strategy.

It needs to be recognized that there may be costs associated with risk avoidance, reduction, transfer and mitigation and that these costs need to be included in the risk management strategy. Sub-contracting, insurance and contract conditions are the most common forms of risk transfer. For more information about insurance, please refer to section 5.8. It is often not possible to insure against all risks or the costs of covering other risks may be unacceptable. It is also important to note that while you may get financial compensation from an insurer, you will still have to meet your contractual obligations to deliver the system or service.

Some activities, because of the potential hazards involved or because of the potentially undefined impact of a risk, may require special insurance cover. Specialist advice should be sought from the Office of Risk Management for individual cases.

4.5 Managing Opportunities

If significant effort is going to be put into managing risks that result from uncertainty, at least equal effort ought to be considered for managing the opportunities. Possible actions include:

- Exploit -the opportunity to maximize the probability of its occurrence.
- Enhance -the expected outcome of the opportunity.
- Ignore - the cost of exploiting or enhancing the opportunity outweighs the benefits that can be gained.

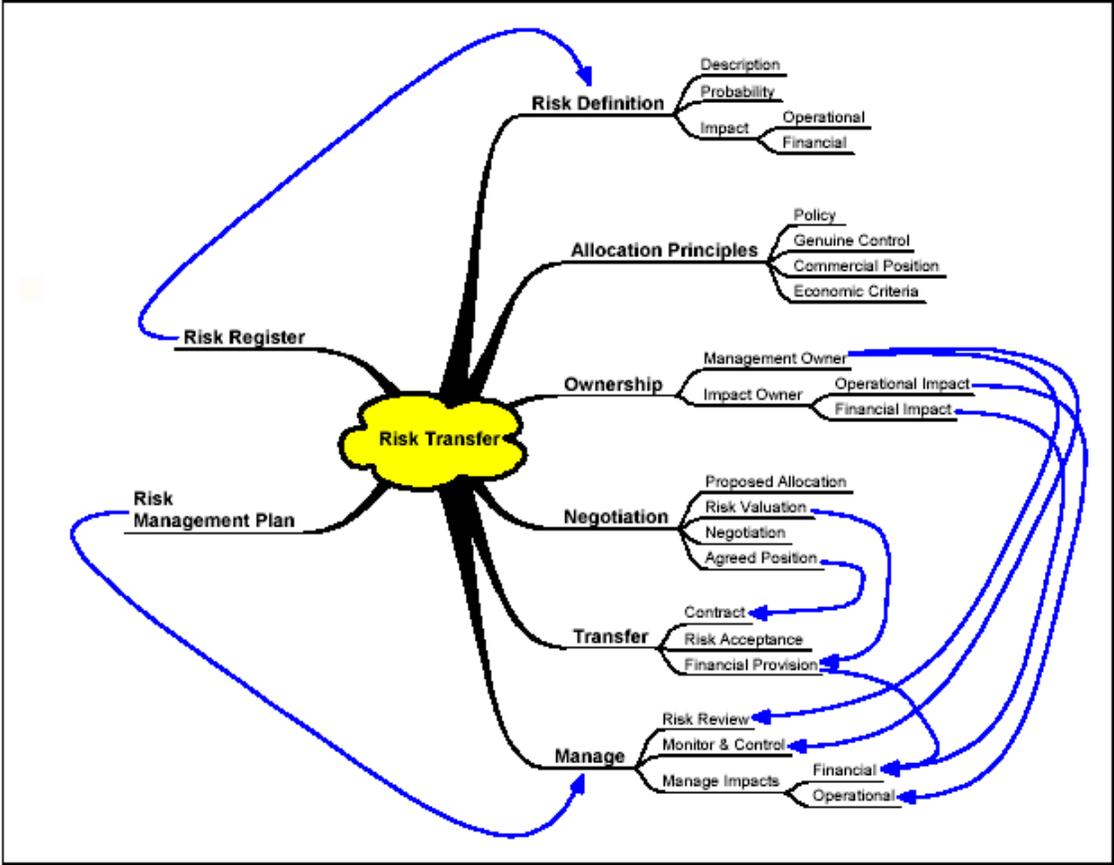
In the same way that there are costs associated with the risk management options, there are also likely to be costs associated with opportunity exploitation and enhancement.

4.6 Risk Allocation

Appropriate allocation of risk between the various parties involved in a contract is a critical activity within the risk management process. The "Mind Map" (diagram 4.6) illustrates the key issues associated with the risk transfer process. Similar principles apply to risks escalated or delegated between different levels within an organization although there are unlikely to be contractual documents involved in an internal risk transfer.

Although risks may have been transferred internally or externally, there is still an implied responsibility of the project manager to remain satisfied that the transferred risks are being effectively managed by the new owners.

Figure 4.6: Risk Transfer Relationships



As part of the risk identification activities, a *Risk Register* is prepared that contains details of all risks identified and provides a full *risk definition* including a detailed *description*, *probability* of occurrence and *impact* defined in terms of both *operational* and *financial* impact. Other details may also be included although these are not directly relevant to the risk transfer process.

As part of the risk management planning, the following *risk allocation principles* will be applied:

- Allocation of risk in accordance with existing Government or customer *policy*.
- Allocation of risk to the party with *genuine control* over the risk.
- Recognition of *commercial positions* that may dictate the allocation of certain risks.
- Allocation based on *economic criteria* in order to achieve best value for money for the public sector.

In order to achieve an appropriate transfer of risk, a process of *negotiation* is required during which the *proposed allocation* of risk is discussed and a risk valuation exercise is undertaken for certain risks for which an economic judgment is required. As a result of detailed *negotiation*, an agreed position will be reached.

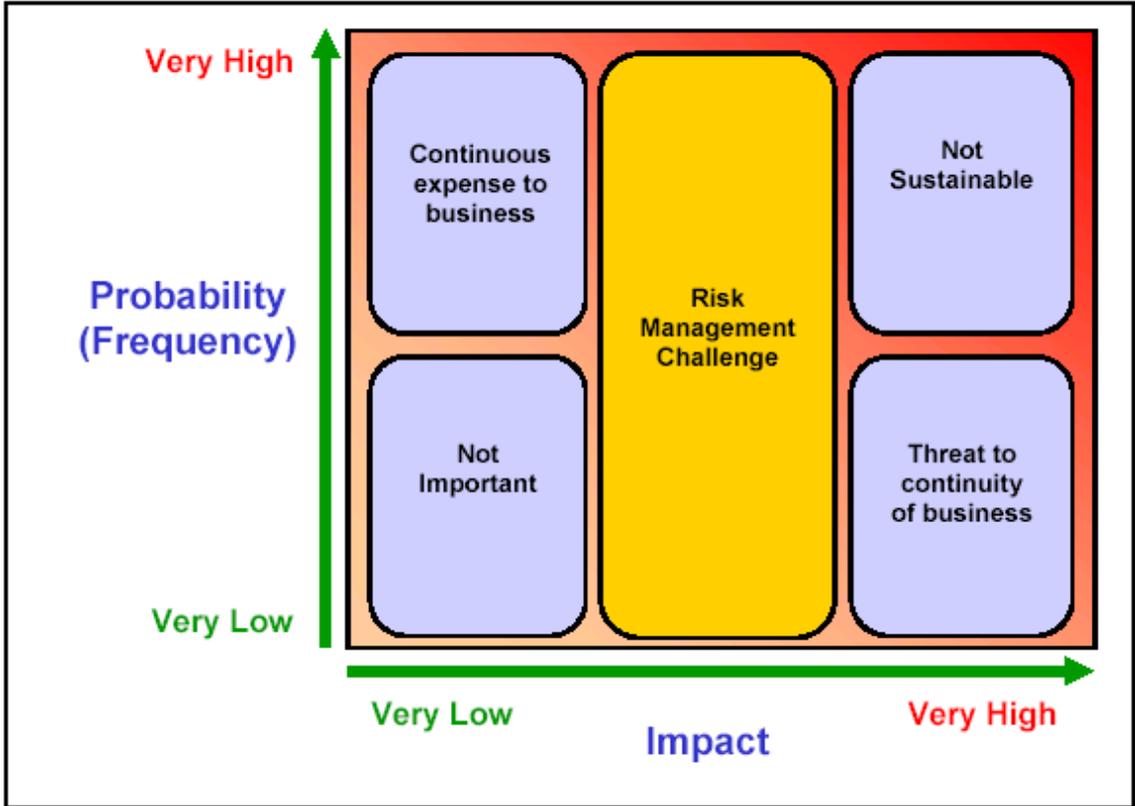
This agreed position will be the basis of the formal risk *transfer* which will be incorporated in the *contract* documents and will constitute *risk acceptance* by the respective parties. It is assumed that appropriate *financial provision* will be made by the parties to cover the possible consequences of the risks that they have assumed.

The *Risk Management Plan* defines the processes used to *manage* risks during the life of the contract. Risk management activities will include regular *risk reviews* and routine *monitor and control* activities undertaken by the management owner of the risk. If the risk does occur, the financial and operational impact owners will have to *manage the impacts* both *financial* and *operational* within the financial provisions that have been made.

4.7 Risk Tolerance

The tolerability of risk will depend on a number of factors including the University of Ottawa’s appetite for risk and the individual risks themselves. The matrix below shows the general effect of risks on a business.

Figure 4.7.1 Probability versus Impact Effects on a Business



This is further explained by the risk categories outlined in the figure below where we can see that risks with low probability and low impact are generally not important while those with high probability and high impact are not sustainable.

Figure 4.7.2 Probability Impact and Risk Category Relationships

		Probability				
		VLO	LO	MED	HI	VHI
Impact	Disastrous	4	3	2	2	1
	Severe	5	4	3	2	1
	Substantial	5	4	3	3	2
	Marginal	5	5	4	3	3
	Negligible	5	5	5	4	3

Risk Categories

- 1 Critical
- 2 Severe
- 3 Significant
- 4 Minor
- 5 Possible Concern

Risks with a high probability but low impact represent a continuous expense to organization and need to be addressed in the operational plan. Risks with a low probability but a high impact are threats to the continuity of the business and will need to be subject to special measures if they are to be accepted. The exact boundaries between these areas will be determined by the risk appetite of the organization. Risks having a medium impact and the full range of probability are those that present the challenge to establish efficient and effective risk management.

4.8 Insurance

Projects involving the provision of a major asset, particularly those where significant funds are provided, generally involve significant capital outlay and subsequent activities, such as building construction and long-term operation of the facility may involve significant technical and commercial risk. Insurance to cover the risks associated with such projects depends on the type of risk involved.

Insurance cover is, if available, a traditional method of transferring risk to a third party - at a cost. Other risk management techniques also need to be addressed, particularly for those risks that are uninsurable. Innovative approaches to managing the risks associated with capital finance projects are essential and risk reduction, transfer, and mitigation options need to be explored carefully.

With all insurance, the cost of premiums must be weighed against the probability of the risk occurring and the potential losses. It is also generally true that while insurance provides a degree of financial compensation for a loss, the real cost in financial, operational and reputation terms of recovering from the event may be significant. The delays in negotiating an insurance claim may also be significant with consequential impact on cash flow and, possibly, project viability.

The following table lists the standard types of insurance available to cover risks associated with major projects.

Table 4.8: Insurance Types

Type	Cover
Property	Loss/damage to plant, buildings, materials, stock due to fire, storm, flood etc.
Business Interruption	Financial cost of remedial work, new premises, overtime, wages etc.
Crime	Theft by third parties.
Product Liability	Injury, death or damage caused by defective products.
Commercial General Liability	Injury, death or damage to third parties caused by eg spread of fire etc.
Director's Liability	Personal Liability of directors and officers in respect of business duties.
Professional Liability	Liability of staff in respect of professional duties.
Goods in Transit	Loss or damage to goods while in shipment, whether road, rail, sea or air.
Employer's Liability	Injury or death to employees suffered in the course of employment.
Credit	Customer failure to pay.
Marine	Injury, death or damage associated with marine operations.
Aviation	Injury, death or damage associated with aviation operations.

4.9 Risk Budgeting

The principle of risk budgeting is particularly important in determining the final price to be submitted in the Proposal. The total project price is made up as follows:

- Known Costs
 - ❖ Fixed project costs
 - ❖ Cost of risk reduction actions
- Uncertain Costs (Risk Budget)
 - ❖ Cost of risk mitigation actions
 - ❖ Allowance for estimation errors and uncertainty
 - ❖ Contingency for high risks
- Target benefits

It is important that the Risk Budget is retained for as long as the risks exist.

The problem of determining the size and allocation of the risk budget is, perhaps, the most difficult to quantify. It will depend on the project, the risks, the experience (or otherwise) of the estimators and the manager. It is in this area that the historic records of how projects have performed over their complete lifecycle are so important. "Corporate Memory" will only exist if it is documented. Risk modeling may be a useful technique for quantifying risk budgets.

A Risk Budget in cash alone is useless unless there are resources to spend it on and time in which to spend it.

4.10 Risk Monitoring and Control

Risk monitoring and control represents the dynamic process of handling risk. Risk needs to be continuously monitored, and have the appropriate controlling actions taken, in order to reduce the probability of a risk occurring or the consequent impact.

The depth to which risk is managed must be proportional to the perceived degree of risk (its probability and impact) and, in particular, the cost and urgency of the project. Low cost, non-urgent projects may not require a great deal of risk management. Complex, high cost, urgent projects, on the other hand, will need considerable time and effort devoted to risk management.

To manage risk successfully, business or project managers must:

- Take a disciplined approach to decision making.
- Perceive risk as something that can be managed.
- Balance risk and opportunity.
- Retain a view of the whole organization and how risk impacts the whole.
- Manage risk continuously.

Having established an initial risk register, this should be amended and updated throughout the project, and the impact of changes monitored through ongoing risk analysis to identify

risks that are no longer relevant and new or emerging risks. This information forms the basis of the Risk Management Plan

4.11 Strategies

The strategies below promote the development of risk management at the University of Ottawa. To achieve our objectives, we must accomplish the following:

- 1) **Understand the nature of our hazards:** Know and specify the risk that earthquakes, fires, floods and other events pose to our facilities, populations, and programs.
- 2) **Develop or obtain the tools necessary to reduce our risk:** Define efficacious mitigation steps, find the resources to implement them, and ensure that our personnel have the capacity, the training and the backing to do so.
- 3) **Eliminate known sources of harm:** Pursue an active and aggressive program of risk mitigation in structures, utility systems, and non-structural elements, etc. until the damage potential has been acceptably reduced. In tandem, the University of Ottawa must apply prudent loss reduction and risk management practices to fire hazards.
- 4) **Educate and train university and community people:** Provide training for all members of the campus community so they are prepared for disaster response and apprised about loss reduction measures. We should provide planning templates and guidelines, and it will make clear the potential damages that are considered likely and within which we must be prepared to operate. The dissemination of preparedness and mitigation information within departments will be the responsibility of deans, department chairs and unit directors. Everyone should be instructed in ways to protect records, class notes, collections, and research.
- 5) **Provide incentives to faculty and staff:** Reduce their potential losses at the University of Ottawa. This may take the form of campus-funded grants for non-structural retrofit in offices and labs, informational materials etc.
- 6) **Integrate risk management concepts into curricula in relevant disciplines at the University of Ottawa:** Today's students are tomorrow's policy makers, voters, and alumni donors. What they learn here will inform their choices in the future.
- 7) **Cooperate and collaborate with neighbouring communities in preparedness, mitigation, education and training:** Be explicit with the City of Ottawa about our mutual expectations and responsibilities in emergency response, risk reduction, and recovery.
- 8) **Develop support for the University of Ottawa Risk Management activities from private organizations and individuals:** Enlist Alumni office and other related departments in promoting life safety and loss reduction projects as worthy of financial and technical support by businesses, foundations, and other donors.

In order to effectively manage risks at uOttawa, these tools must be employed in order to prepare plans to minimize risk, to mitigate risk impacts and to subsequently monitor and control risk during the whole business or project lifecycle.

Afterword

The purpose of this manual was to provide the framework to decrease the frequency of incidents and to also reduce the impact of incidents that do end up occurring. By reviewing the chapters and supplementary material provided in this manual, you should be able to:

- Have a broad understanding of what risk management is and why it is important at uOttawa
- identify the sources of risk in your work functions
- understand the key processes involved in risk management
- Identify the measures are in place to manage risks in your workplace
- Understand how risk management measures are monitored through internal control and audits

We hope that you have found this manual helpful and that you will be able to integrate risk management into your decision-making - with support from the Office of Risk Management as required.

Kindly take a moment to provide us with feedback on this manual at safety@uottawa.ca - please let us know what you found most useful about this manual as well as the sections you feel we could improve upon and how (more examples, more explanations, pictures, etc.). Please help us make this a better resource for clients just like you!

I. Sample Forms

On the next few pages you will find a few blank forms that may assist you in your development of a risk management program for your activities. For Electronic copies, please contact the Office of Risk Management. The following forms are provided for your convenience:

- Risk Register (two options)
- Risk Control Worksheets

Serial	Summary Description		Score		Owner	
	Risk Description	Risk Impact	Probability	Impact	Risk Reduction Actions	Risk Mitigation Actions
	<i>Summary Description</i>		<i>Score</i>		<i>Owner</i>	
	<i>Risk Description</i>		<i>Probability</i>		<i>Risk Reduction Actions</i>	
	<i>Risk Impact</i>		<i>Impact</i>		<i>Risk Mitigation Actions</i>	
	<i>Summary Description</i>		<i>Score</i>		<i>Owner</i>	
	<i>Risk Description</i>		<i>Probability</i>		<i>Risk Reduction Actions</i>	
	<i>Risk Impact</i>		<i>Impact</i>		<i>Risk Mitigation Actions</i>	

Serial	Risk Title	Responsible Party	Risk Reduction	Probability	Risk Score
	Impact	Interested Party	Risk Mitigation	Impact	

Notes:

- Risks are for example purposes only, not necessarily accurate
- Risk Reduction is a measure put in place to reduce the probability of an event occurring
- Risk Mitigation is a measure put in place to reduce the impact of an event
- Probability Scoring: Very Low (1); Low (2); Medium (3); High (4); Very High (5)
- Impact Scoring: Negligible (5); Marginal (10); Substantial (15); Severe (20); Disastrous (25)
- Risk Score Calculation: Risk Score = Probability Score X Impact Score

RISK / CONTROL WORKSHEET		
PROCESS NAME:		
Process Map		
Goals and Objectives	Risks	Control Activities

II. Enterprise Risk Management Policy

For the most current version of the Enterprise Risk Management Policy, please consult http://web5.uottawa.ca/admingov/policy_54.html . The policy text is reproduced here for ease of reference.

Policy 54

Approved Board of Governors 2006.28

ENTERPRISE RISK MANAGEMENT POLICY

PURPOSE

1. The purpose of this policy is to formalize the University's risk management program and articulate the roles and responsibilities of the Board of Governors, the University of Ottawa's Management and employees, and relevant committees.

PREAMBLE

2. Risk exists in all activities and cannot be avoided. However, the risks taken and accepted on behalf of the University of Ottawa must be tolerable; risks must be identified and the management of them consciously accepted.

DEFINITIONS

3. Risk is defined as any threat that, if it occurs, may prevent the attainment of the objectives of the University, in whole or in part.
4. Risk management provides the framework to identify, assess and manage risks. It provides the methodology for integrating risk into decision making.

SCOPE

5. This policy is to be applied to activities undertaken by, and on behalf of, the University of Ottawa. This includes Academic, Research and Support activities.

POLICY

6. Risk management is an integral part of management, not a separate function for specialists. It forms part of strategic planning, business planning and investment/research project approval procedures.

7. The University of Ottawa will foster a culture of spreading best practices and expertise acquired from our risk management activities across the University for the benefit of the entire organization.

8. The University of Ottawa will maintain a risk register identifying the critical risks to the University, the faculties and services.

9. Risk management shall be considered in all project approvals in a manner appropriate to the nature and scope of the project as described in the University of Ottawa Risk Management Manual.

9.1 Risk management should be considered early in the project planning process.

9.2 Preventing a loss from occurring should be emphasized over decreasing the impact of a loss.

9.3 Where feasible, risks should be contractually transferred to other parties.

9.4 External risks shall be considered as well as internal risks.

10. A formal statement of the University of Ottawa's risk tolerance will be reviewed annually by the Enterprise Risk Management Committee and approved by the Administrative Committee. Activities that are outside this risk tolerance shall not be undertaken unless specifically approved by the President and/or their designate.

11. The University of Ottawa will establish and maintain an Enterprise Risk Management Committee. Chaired by the Vice-President, Resources it will include representatives from the: Office of the Vice-President, Research; Office of the Vice-President Academic and Provost; Office of the Vice-President, University Relations; Financial Resources; Internal Audit Office; Office of the Legal Counsel; and the Office of Risk Management. The Enterprise Risk Management Committee will submit an annual report to the Audit Committee of the Board of Governors.

RESPONSIBILITIES

12. All faculty and staff have a responsibility for maintaining good internal controls and managing risk. Everyone shall be aware of the risks that are present in their activities. As new risks are identified they shall be identified to their supervisor or staff member concerned, where possible with recommended risk management strategies.

13. Supervisors and managers are responsible for ensuring that all risks in their areas of operations are identified and managed appropriately.

14. Deans and Directors are responsible for identifying, evaluating and managing risks within their faculties and services. Deans and Directors shall ensure that everyone in their organization understands their risk management responsibilities and must make clear the extent to which the staff are empowered to accept risks.

15. The University's Risk Manager is responsible for developing and overseeing the risk management system including the University of Ottawa Risk Management Manual.

16. The Office of Risk Management will provide support to assist managers in identifying, assessing, and managing risks.

17. The Internal Audit Office will work to assess how well the policy has been implemented and use the risk registers, where appropriate, for input in preparing a risk-based audit plan.

18. The Enterprise Risk Management Committee will oversee the management of risks at the University of Ottawa and is responsible for the risk register identifying the material risks and their management.

19. The Administrative Committee is responsible for setting policies on risk management and internal controls and to ensure the risk management process is incorporated in priority setting, planning and decision making.

20. The Audit Committee of the Board of Governors is responsible for reviewing the management reports on risk management from the Enterprise Risk Management Committee and findings from the audit process in order to satisfy itself that the process operates effectively and efficiently. The Audit Committee will report annually to the Board of Governors their assessment of risk management.

Published December 18, 2006

(Office of the Vice-President, Resources)

III. References

The following books provide further insight into Risk Management and its application.

- a) National /International Standards
 - BS 6079-3:2000
Project Management
Guide to the Management of Business Related Project Risk
British Standards Institution
 - BS 8444 Part 3 (IEC 300-3-9)
Risk Management
Guide to Risk Analysis of Technological Systems
British Standards Institution
 - CAN/CSA-Q850-97
Risk Management: Guideline for Decision Makers
National Standard of Canada
 - AS/NZS 4360:2004
Risk Management
Australian Standard
 - IEC 60300 Part 3-13
Dependability Management:
Application Guide - Project Risk Management
IEC
- b) Risk Management Standard
AIRMIC, ALARM, IRM
- c) Management of Risk: Guidance for Practitioners
UK Office of Government Commerce
ISBN 0 11 330990 0
- d) Project Risk Analysis and Management (PRAM) Guide
Association for Project Management
ISBN 0 9531590 0 0
- e) Introducing RISKMAN Methodology
NCC Blackwell
ISBN 1 85554 356 7
- f) Control of Risk
Construction Industry Research & Information Association
ISBN 0 86017 441 7
- g) Commercial Risk Management
Thorogood
ISBN 1 85418 046 0
- h) Project Risk Management
J Wiley

ISBN 0 471 95804 2

- i) A Guide to the Project Management Body of Knowledge
Project Management Institute
ISBN 1 880410 12 5

For further assistance with Risk Management please contact the Office of Risk Management at the following co-ordinates:

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