

**Joint Risk Management Section**

**ERM Education White Paper**

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## Joint Risk Management Section – ERM Education White Paper

**Mission Statement and Charge:** The JRMS Council concluded at its December 2008 meeting that the section, in its capacity as subject matter experts, should play a more influential role in weighing in on “what ought to be” with respect to educational requirements of an ERM practitioner for the profession at large. Given the development of the Global “XRX” ERM credential and the continued evolution of the SOA’s CERA credential, the Council agreed on a 2009 initiative to develop a White Paper on ERM Education. The intent of the paper is to provide guidance to the actuarial leaderships globally and provide an evolutionary view of the educational requirements (learning objectives and/or content) for the profession in this rapidly evolving field.

The ERM Education White Paper Task Force consists of experienced risk professionals from the SOA, CAS and CIA who bring together expertise in the practice of ERM as well as background in the educational and examination systems of the CAS and SOA.

### White Paper Task Force

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## Background on ERM initiatives

Enterprise Risk Management has been part of the evolutionary developments of risk management over the past two decades. It has been and is expected to continuously evolve. Alternative risk transfer mechanisms such as the securitization of catastrophe risk through the financial markets and other new instruments developed to hedge financial risks, are just examples of risk transfer tools that have expanded beyond the insurance industry to the capital markets and others. Regulation has gained a focus on improved corporate governance, while rating agencies are now recognizing ERM in financial strength ratings.

These and other developments are increasing the demand for professionals who can provide enterprise risk management services as many companies are developing or improving their ERM capabilities. The recent financial crisis has exposed the extent to which risks are interrelated and can have catastrophic consequences reinforcing the need for a rigorous ERM framework. This task force believes that the actuarial profession is well-poised to serve as one of the premiere thought leaders in the ERM discipline

Both the Society and of Actuaries and Casualty Actuarial Society have adopted the definition of 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."*

Although other organizations may have a head start (e.g. GARP, PRMIA), it is apparent that ERM opportunities exist for actuaries, especially in the financial services and healthcare industries where the profession already plays a significant role. Although the CERA is a newer credential than PRM or FRM, it can differentiate itself on rigor and on the professions standards of practice and codes of conduct characteristic to the profession.

In early 2007, the Society of Actuaries launched its ERM Credential, the "Chartered Enterprise Risk Analyst" ("CERA") in the interest of exploiting the actuarial opportunities in this discipline. The CERA, although considered an alternative pathway to associateship membership ("ASA"), is really positioned as fellowship-esque education, given the learning objectives underlying the syllabus content. There was an initial grandfathering phase to recognize industry thought leaders and experience practitioners to form the starting foundation of the credential, intended to reflect the skill sets underlying credential holders.

The Institute/Faculty of Actuaries (UK), the Institute of Actuaries (Australia), and the Casualty Actuarial Society have been, in various degrees, revising their respective Syllabus content to evolve enterprise risk management topics and corresponding learning objectives into its existing syllabus.

In addition, a consortium of actuarial organizations across the globe, which include the organizations that sponsor the joint risk management section (SOA,CAS,CIA) are currently serving on two international working parties established in exploring the feasibility of establishing a Global Enterprise Risk Management (ERM) credential (known currently as "XRX"). This effort began in October 2007 at the Dublin meeting of the International Actuarial Association (IAA), and has continued during subsequent meetings in 2008 in Quebec City and Cyprus. The ultimate goal of this effort is to facilitate a global ERM credential ("XRX") via a treaty of recognition and accreditation among participating associations and using common syllabus content and education standards.

## **Scope of ERM Education**

In presenting the objectives of ERM education, it is important to clarify the scope. Our task force has proposed an outline that is intended to build expertise in all aspects of Enterprise Risk Management. This means that the education should be applied broadly to various aspects of risk management, which is the essence of Enterprise Risk Management. For example, ERM education should not have focused application to specific practice areas within the insurance or financial industries. Rather, it should cross over traditional silos of risk management, thereby enabling the trained professional to recognize and manage risk as it emerges in areas outside a particular area of expertise.

While the principles of Enterprise Risk Management have broad scope in many aspects of risk, we propose that ERM Education sponsored by the actuarial societies should build particularly strong skills in the financial aspects of risk management. Therefore, elements of ERM education may focus their applications within the broader financial service industry. We feel this approach will help to expand the reputation of actuaries in risk management positions within the industry they are most likely to practice in the near term. As actuaries become better known for strong broad risk management skills within financial services companies, opportunities for these skills to be applied in other industries will increase in the long term. However, the syllabus should evolve to incorporate increasing focus on operational risk and analysis which has broader application in the non-financial sectors.

## **ERM Learning Objectives**

This section provides the Learning Objectives deemed suitable by the JRMS for an ERM credential. These objectives include those identified by XRX and CERA. However, they have been enhanced to better define the objectives and in some cases objectives have been added while in other cases objectives have been eliminated or combined. We have tried to maintain a consistent level without having learning objectives that are too broad or too narrow.

These learning objectives assume a basic level of education similar to those provided by most actuarial organizations.

These learning objectives are defined in terms of educational requirements for a ERM based credential.

## **Enterprise Risk Management Concept and Framework**

- (a) Demonstrate an understanding of the concept of ERM, the drivers behind it and the resulting value to organizations.
- (b) Explain the principal terms in ERM.
- (c) Discuss and design appropriate frameworks for an organization's enterprise risk management function including governance, committee structure, policy development, roles and responsibilities.
- (d) Plan how an organization can create a risk management culture including: risk consciousness, accountabilities, discipline, collaboration, incentive compensation, and communication.
- (e) Demonstrate an understanding of governance issues and how these issues are resolved through organizational structure.
- (f) Demonstrate an understanding of risk frameworks in regulatory and other environments (e.g. Basel II, Solvency II, Sarbanes-Oxley, COSO, Aus/NZ 4360, ISO 31000) and their underlying principles.
- (g) Demonstrate an understanding of the perspectives of regulators, rating agencies, stock analysts, and company stakeholders and how they evaluate the risks and the risk management of an organization.
- (h) Propose how an ERM process can create value for an organization through better assessment of the organization's risk profile, possible reduction in economic capital, improvement in rating, etc.
- (i) Analyse the risk and return trade-offs that result from changes in the organization's risk profile.
- (j) Demonstrate an understanding of the evolution of ERM and the various events which have driven its development.



## **ERM Process (Structure of the ERM Function and Best Practices)**

- (k) Demonstrate an understanding of the elements of an organization's risk policy.
- (l) Demonstrate an understanding of the elements of the ERM process: identification, measurement, monitoring and management.
- (m) Demonstrate how to articulate, define and measure an organization's risk appetite and how an organization uses risk appetite to develop business strategy and make strategic decisions.
- (n) Demonstrate an understanding of risk tolerances and limits, how to approach the development of meaningful tolerances & limits, the relationship of tolerances & limits to risk appetite and the use of tolerances & limits in managing the risk profile of the organization.
- (o) Determine and assess the overall corporate risk exposure/profile arising from financial and non-financial risks.
- (p) Evaluate the elements of a successful risk management function and propose a structure for an organization's risk management function including committee structure, roles & responsibilities, role of the Chief Risk Officer, the Board and internal audit.
- (q) Discuss the importance of communication across the organization to the success of any ERM program.
- (r) Determine how financial and other risks and opportunities influence the selection of strategy and how ERM can be appropriately imbedded in an entity's strategic planning.
- (s) Analyse the application of ERM to real (case study) and hypothetical contexts.

## **Risk Categories and Identification**

- (t) Demonstrate an understanding of the various approaches to risk identification including the risk self assessment process.
- (u) Demonstrate an understanding of the various approaches to emerging risk identification including the role of stress testing and scenario analysis.
- (v) Analyse financial risks faced by an entity, including but not limited to:
  - Currency
  - Credit
  - Spread
  - Liquidity
  - Interest rate
  - Equity
  - Hazard/insurance
  - Catastrophe
  - Pricing risk-insurance
  - Pricing risk-banking
  - Mortality and morbidity
  - Reserving
  - Underwriting
  - Parameter
  - Model
  - Policyholder behaviour
  - Hedge program
  - Etc.
- (w) Analyse non-financial risks faced by an entity, including but not limited to:
  - Market conduct
  - Human resources
  - Process
  - Technology
  - Legal
  - Compliance
  - Fraud
  - Disaster
  - Etc.
- (x) Analyse strategic risks faced by an entity, including but not limited to:
  - Reputation
  - Competitor
  - Regulatory
  - Etc.

## Risk Quantification Techniques

- (y) Demonstrate how each of the financial risks faced by an entity can be amenable to quantitative analysis including a discussion of the advantages and disadvantages various techniques including:
  - Value at Risk (VaR)
  - Stochastic analysis
  - Scenario analysis
  - Stress Testing
- (z) Examine and discuss the advantages and disadvantages of enterprise-wide risk aggregation techniques including correlation matrices, integrated risk distributions, copulas, etc.
- (aa) Examine the use of scenario analysis and stress testing in the risk measurement process.
- (bb) Define and evaluate model and parameter risk.
- (cc) Demonstrate the ability to develop models to handle diverse risks.
- (dd) Discuss the importance of model validation and governance to the ERM process.
- (ee) Demonstrate an understanding of the techniques used to quantify exposures to operational risks.

## Risk Measures

- (ff) Define and demonstrate the risk metrics used to quantify major types of financial risk exposure.
- (gg) Demonstrate the properties of risk measures.
- (hh) Analyse quantitative financial and insurance data using modern statistical methods.
- (ii) Demonstrate best practices in risk measurement, modelling, and management of various financial and non-financial risks faced by an entity.
- (jj) Describe the concept of economic measures of value (e.g., EVA, embedded value, economic capital) and demonstrate their uses in the risk management process and corporate decision-making processes.
- (kk) Explain risk measures and demonstrate how to use them in economic capital assessment.
- (ll) Evaluate and propose techniques of allocating/appropriating the “cost” of risk/capital/hedge strategy to business units in order to assess risk and gauge performance (e.g. returns on marginal capital).
- (mm) Demonstrate the ability to develop an economic capital model for a representative financial firm.

## Risk Management

- (nn) Demonstrate an understanding of the rationale and process for managing risk and the selection of the appropriate degree of risk mitigation.
- (oo) Describe the process for managing post-event risk and the process for minimizing loss exposure.
- (pp) Demonstrate risk optimization and the impact on an organization's value of an ERM strategy.
- (qq) Demonstrate means for transferring risk to a third party, and estimate the costs and benefits of doing so.
- (rr) Demonstrate means for reducing risk without transferring it.
- (ss) Demonstrate how derivatives, synthetic securities, and financial contracting may be used to reduce risk or to assign it to the party most able to bear it.
- (tt) Develop an appropriate choice of hedging strategy for a given situation (e.g., reinsurance, derivatives, financial contracting), which balances benefits with inherent costs, including exposure to credit risk, basis risk, moral hazard, and other risks.
- (uu) Demonstrate the practicalities of market risk hedging, including dynamic hedging.
- (vv) Define credit risk as related to derivatives; define credit risk as related to reinsurance ceded; define counter-party risk and demonstrate the use of comprehensive due diligence and aggregate counter-party exposure limits.
- (ww) Analyse funding and portfolio management strategies to control equity and interest rate risk, including key rate risks. Explain the concepts of immunization including modern refinements and practical limitations.
- (xx) Analyse application of ALM principles to the establishment of investment policy and strategy including asset allocation.
- (yy) Describe other key risks (e.g. operational, strategic, legal, and insurance risks) and uncertainty and demonstrate possible mitigation strategies.

## Educational/Accreditation Requirements

The prior section shows the subject matter topics agreed upon, in the form of topic areas and learning objectives. Within each Learning Objective, decisions must be made with respect to:

- a) Depth of Coverage – i.e., cognitive level, and
- b) Breadth of Coverage – i.e., extensive subject matter and areas of application

How one decides depends on the role of the ERM designation. If the intended level is equivalent to the SOA's ASA, then the designation's education requirements are likely to emphasize quantitative subject matter, technical issues and knowledge, and material oriented to existing text books. If intended level is equivalent to a "post-FSA", then designation is likely to emphasize qualitative subject matter, managerial and judgment oriented issues and knowledge, and material more likely found in managerial or business publications than mathematical textbooks.

The task force discussed whether there should be an experience requirement for the designation. The answer here also relates to the level of the designation. Experience is relevant to the latter (post-FSA) approach, less so to the former.

Therefore, the actuarial organizations need to be clear about the role of the ERM designation, as it has implications for the form of education/certification, and for the marketing of that professional designation, and for the "verbs" in the learning objectives.

## Conclusion

The JRMS task force reviewed the Learning Objectives of both the proposed XRX and the CERA in developing the Learning Objectives outlined in previous sections of this paper.

The task force noted that while the wording of the Learning Objectives for each of the designations was slightly different, and Syllabus readings different, the differences were in fact fairly small and the similarities quite strong.

The task force felt that the Learning Objectives outlined in this document could be proposed very broadly, internationally, as "consensus" Learning Objectives for an ERM Education. It was also felt that revisions by the SOA for the CERA and the XRX syllabus committee to align with the consensus learning objectives would be fairly modest given the relatively high level nature of the learning objectives and flexibility to select specific syllabus readings.

The task force recognized that the proposed learning objectives are not sufficient for an in-depth understanding of risk unique to a particular specialty, such as property/casualty insurance and natural hazard modeling, or reserving, or health insurance or life insurance.

The task force felt that two considerations mitigated concern about this in-depth understanding of unique risks: One, given the nature of ERM and an ERM designation, the focus should be on developing skills to be applied broadly across an enterprise to address all aspects of risk and risk management. And second, there is ample opportunity to address some risk areas, such as natural hazard risk, in the selection of readings and detailed learning objectives in the Risk Categories and Identification, Risk Quantification Techniques and Risk Measures sections.

The task force felt that while reaching agreement on the consensus learning objectives would likely be achievable, and not be an obstacle to aligning the ERM designations, more discussion would be required on defining the "role" of the ERM designation. As outlined in the previous section, Educational/Accreditation Requirements, such an agreement will be necessary to set the breadth and depth of coverage for the agreed learning objectives.