

Fundamentals of Risk Management

A Workshop in Identifying and Managing Risk

Projects frequently involve great technical uncertainty, made more challenging by an environment with dozens to hundreds of people from conflicting disciplines. Yet uncertainty has two sides: with great risk comes great opportunity. Risks and opportunities, for instance, can be handled together to seek the best balance for each project. Uncertainty issues can be quantified to better understand the expected impact on your project. Technical, cost and schedule issues can be balanced against each other. This course provides detailed, useful techniques to evaluate and manage the many uncertainties that accompany complex system projects

Summary

This one-day workshop presents the fundamentals of standard risk management processes: how to identify risks, risk analysis using both intuitive and quantitative methods, risk mitigation methods, and risk monitoring and control.

Practice the skills on a realistic “Submarine Explorer” case study. Identify, analyze, and quantify the uncertainties, then create effective risk mitigation plans.

Instructor

Eric Honour, international consultant and lecturer, has a 38-year career of complex systems development & operation. Founder and former President of INCOSE. He has led the development of 18 major systems, including the Air Combat Maneuvering



Instrumentation systems and the Battle Group Passive Horizon Extension System. BSSE (Systems Engineering), US Naval Academy, MSEE, Naval Postgraduate School, and PhD candidate, University of South Australia.

What You Will Learn

- Four major sources of risk
- The risk efficiency concept, balancing cost of action against cost of risk
- The structure of a risk issue
- Five effective ways to identify risks
- The basic 5x5 matrix
- Three diagrams for structuring risks
- How to quantify risks
- 29 possible risk responses
- Efficient risk management that can apply to even the smallest project

Course Outline

- 1. Managing Uncertainty** – Concepts of uncertainty, both risk and opportunity. Uncertainty as a central feature of system development. The important concept of risk efficiency. Expectations for what to achieve with risk management. Terms and definitions. Roles of a project leader in relation to uncertainty.
- 2. Subjective Probabilities** – Review of essential mathematical concepts related to uncertainty, including the psychological aspects of probability
- 3. Risk Identification** – Methods to find the risk and opportunity issues. Potential sources and how to exploit them. Guiding a team through the mire of uncertainty. Possible sources of risk. Identifying possible responses and secondary risk sources. Identifying issue ownership. Class exercise in identifying risks.
- 4. Risk Analysis** – How to determine the size of risk relative to other risks and relative to the project. Qualitative vs. quantitative analysis.
 - Qualitative analysis: understanding the issues and their subjective relationships using simple methods and more comprehensive graphical methods. The 5x5 matrix. Structuring risk issues to examine links. Source-response diagrams, fault trees, influence diagrams. Class exercise in doing simple risk analysis.
 - Quantitative analysis: what to do when the level of risk is not yet clear. Mathematical methods to quantify uncertainty in a world of subjectivity. Sizing the uncertainty, merging subjective and objective data. Using probability math to diagnose the implications. Portraying the effect with probability charts, probabilistic PERT and Gantt diagrams. Class exercise in quantified risk analysis.
- 5. Risk Response** – Possible responses to risk, and how to select an effective response using the risk efficiency concept. Tracking the risks over time, while taking effective action. How to monitor the risks. Balancing analysis and its results to prevent “paralysis by analysis” and still get the benefits. A minimalist approach that makes risk management simply, easy, inexpensive, and effective. Class exercise in designing a risk mitigation.