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Nota di contenuto	Foundations of Risk Analysis; Contents; Preface; 1 Introduction; 1.1 The Importance of Risk and Uncertainty Assessments; 1.2 The Need to Develop a Proper Risk Analysis Framework; Bibliographic Notes; 2 Common Thinking about Risk and Risk Analysis; 2.1 Accident Risk; 2.1.1 Accident Statistics; 2.1.2 Risk Analysis; 2.1.3 Reliability Analysis; 2.2 Economic Risk; 2.2.1 General Definitions of Economic Risk in Business and Project Management; 2.2.2 A Cost Risk Analysis; 2.2.3 Finance and Portfolio Theory; 2.2.4 Treatment of Risk in Project Discounted Cash Flow Analysis 2.3 Discussion and Conclusions2.3.1 The Classical Approach; 2.3.2 The Bayesian Paradigm; 2.3.3 Economic Risk and Rational Decision-Making; 2.3.4 Other Perspectives and Applications; 2.3.5 Conclusions; Bibliographic Notes; 3 How to Think about Risk and Risk Analysis; 3.1 Basic Ideas and Principles; 3.1.1 Background Information; 3.1.2 Models and Simplifications in Probability Considerations; 3.1.3 Observable Quantities; 3.2 Economic Risk; 3.2.1 A Simple Cost Risk Example; 3.2.2 Production Risk; 3.2.3 Business and Project Management; 3.2.4 Investing Money in a Stock Market 3.2.5 Discounted Cash Flow Analysis3.3 Accident Risk; Bibliographic

Notes; 4 How to Assess Uncertainties and Specify Probabilities; 4.1 What Is a Good Probability Assignment?; 4.1.1 Criteria for Evaluating Probabilities; 4.1.2 Heuristics and Biases; 4.1.3 Evaluation of the Assessors; 4.1.4 Standardization and Consensus; 4.2 Modelling; 4.2.1 Examples of Models; 4.2.2 Discussion; 4.3 Assessing Uncertainty of Y; 4.3.1 Assignments Based on Classical Statistical Methods; 4.3.2 Analyst Judgements Using All Sources of Information; 4.3.3 Formal Expert Elicitation; 4.3.4 Bayesian Analysis
4.4 Uncertainty Assessments of a Vector X4.4.1 Cost Risk; 4.4.2 Production Risk; 4.4.3 Reliability Analysis; 4.5 Discussion and Conclusions; Bibliographic Notes; 5 How to Use Risk Analysis to Support Decision-Making; 5.1 What Is a Good Decision?; 5.1.1 Features of a Decision-Making Model; 5.1.2 Decision-Support Tools; 5.1.3 Discussion; 5.2 Some Examples; 5.2.1 Accident Risk; 5.2.2 Scrap in Place or Complete Removal of Plant; 5.2.3 Production System; 5.2.4 Reliability Target; 5.2.5 Health Risk; 5.2.6 Warranties; 5.2.7 Offshore Development Project; 5.2.8 Risk Assessment: National Sector
5.2.9 Multi-Attribute Utility Example5.3 Risk Problem Classification Schemes; 5.3.1 A Scheme Based on Potential Consequences and Uncertainties; 5.3.2 A Scheme Based on Closeness to Hazard and Level of Authority; Bibliographic Notes; 6 Summary and Conclusions; Appendix A Basic Theory of Probability and Statistics; A.1 Probability Theory; A.1.1 Types of Probabilities; A.1.2 Probability Rules; A.1.3 Random Quantities (Random Variables); A.1.4 Some Common Discrete Probability Distributions (Models); A.1.5 Some Common Continuous Distributions (Models)
A.1.6 Some Remarks on Probability Models and Their Parameters

Sommario/riassunto

Everyday we face decisions that carry an element of risk and uncertainty. The ability to analyse, communicate and control the level of risk entailed by these decisions remains one of the most pressing challenges to the analyst, scientist and manager. This book presents the foundational issues in risk analysis - expressing risk, understanding what risk means, building risk models, addressing uncertainty, and applying probability models to real problems. The principal aim of the book is to give the reader the knowledge and basic thinking they require to approach risk and uncertainty to support d