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Nota di contenuto	Cover -- Title Page -- Copyright -- Contents -- List of Contributors -- About the Authors -- Foreword -- Preface -- Acknowledgments -- About the Companion Website -- Chapter 1 Introduction to Trade-off Analysis -- 1.1 Introduction -- 1.2 Trade-off Analyses Throughout the Life Cycle -- 1.3 Trade-off Analysis to Identify System Value -- 1.4 Trade-off Analysis to Identify System Uncertainties and Risks -- 1.5 Trade-off Analyses can Integrate Value and Risk Analysis -- 1.6 Trade-off Analysis in the Systems Engineering Decision Management Process -- 1.7 Trade-off Analysis Mistakes of Omission and Commission -- 1.7.1 Mistakes of Omission -- 1.7.2 Mistakes of Commission -- 1.7.3 Impacts of the Trade-Off Analysis Mistakes -- 1.8 Overview of the Book -- 1.8.1 Illustrative Examples and Techniques Used in the Book -- 1.9 Key Terms -- 1.10 Exercises -- References -- Chapter 2 A Conceptual Framework and Mathematical Foundation for Trade-Off Analysis -- 2.1 Introduction -- 2.2 Trade-Off Analysis Terms -- 2.3 Influence Diagram of the Tradespace -- 2.3.1 Stakeholder Needs, System Functions, and Requirements -- 2.3.2 Objectives -- 2.3.3 System Alternatives -- 2.3.4 Uncertainty -- 2.3.5 Preferences and Evaluation of Alternatives -- 2.3.6 Resource Analysis -- 2.3.7 An Integrated Trade-Off Analyses -- 2.4

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## Sommario/riassunto

Presents information to create a trade-off analysis framework for use in government and commercial acquisition environments This book presents a decision management process based on decision theory and cost analysis best practices aligned with the ISO/IEC 15288, the Systems Engineering Handbook, and the Systems Engineering Body of Knowledge. It provides a sound trade-off analysis framework to generate the tradespace and evaluate value and risk to support system decision-making throughout the life cycle. Trade-off analysis and risk analysis techniques are examined. The authors present an integrated value trade-off and risk analysis framework based on decision theory. These trade-off analysis concepts are illustrated in the different life cycle stages using multiple examples from defense and commercial domains. Provides techniques to identify and structure stakeholder objectives and creative, doable alternatives Presents the advantages and disadvantages of tradespace creation and exploration techniques for trade-off analysis of concepts, architectures, design, operations, and retirement Covers the sources of uncertainty in the system life cycle and examines how to identify, assess, and model uncertainty using probability Illustrates how to perform a trade-off analysis using the INCOSE Decision Management Process using both deterministic and probabilistic techniques Trade-off Analytics: Creating and Exploring the System Tradespace is written for upper undergraduate students and graduate students studying systems design, systems engineering, industrial engineering and engineering management. This book also serves as a resource for practicing systems designers, systems engineers, project managers, and engineering managers. Gregory S. Parnell, PhD, is a Research Professor in the Department of Industrial Engineering at the University of Arkansas. He is also a senior principal with Innovative Decisions, Inc., a decision and risk analysis firm and has served as Chairman of the Board. Dr. Parnell has published more than 100 papers and book chapters and was lead editor of Decision Making for Systems Engineering and Management, Wiley Series in Systems Engineering (2nd Ed, Wiley 2011) and lead author of the Handbook of Decision Analysis (Wiley 2013). He is a fellow of INFORMS, the INCOSE, MORIS, and the Society for Decision Professionals.

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