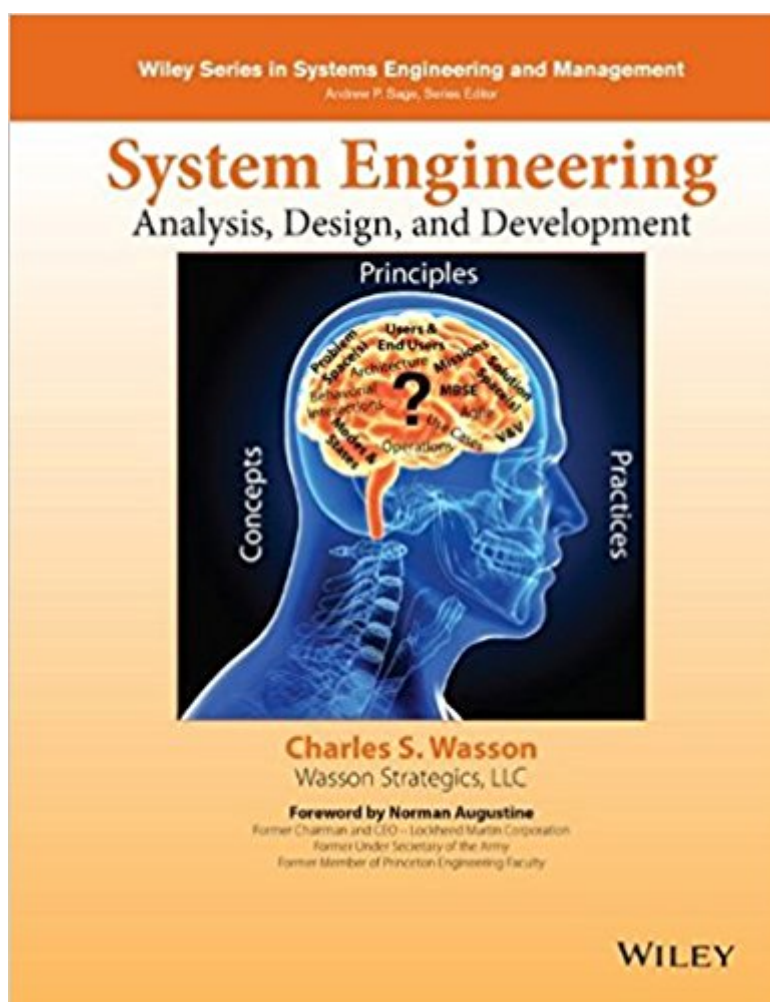


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# System Engineering Analysis, Design, And Development: Concepts, Principles, And Practices (Wiley Series In Systems Engineering And Management)





## Synopsis

Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." —Philip Allen

This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others.

Provides a common focal point for bridging the gap between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services

Each chapter provides definitions of key terms, guiding principles, examples, author's notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices

Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UML) / Systems Modeling Language (SysML), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V)

Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al.

Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, *Systems Engineering Analysis, Design, and Development, Second Edition* is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

## Book Information

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## Customer Reviews

Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." "Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. The objective of this book is to enable systems engineers, engineers, system analysts, project managers, and others to understand HOW Systems Engineering and Development (SE&D) are performed so the reader can become more productive and competitive within the organization and the marketplace. There is a solid examination of SE&D concepts, principles, processes, and practices used to evolve an abstract end user's operational need into a physical, field-operable system or product. Topical discussions are supported by practical examples, observations, mini-case studies, lessons learned, and real life events that illustrate how system engineering impacts technical and programmatic decision making and the corporate bottom line. Provides a common focal point for bridging the gap between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing

systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author's notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UML) / Systems Modeling Language (SysML), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V) Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

Charles S. WASSON, BSEE, MBA, ESEP, is a member of the INCOSE, ASEE, PMI, and IEEE and is President / Principal Consultant of Wasson Strategics, LLC. His professional career spans over 40 years of leadership in program/project management; system, hardware, and software design, development, integration, and test; and organizational and team development. Wasson Strategics is a provider of multi-discipline SE, technical project management, organizational and team development training and consulting services for Fortune 100 & 500 clients striving to achieve System Engineering and Development excellence.

System Engineering Analysis, Design and Development was in depth, full of explanation, extremely detailed, followed out processes and steps to their logical and coherent ends with complete explanation and understanding. Not a reading book, not intended to be full of wit, or be "fun", this is a serious professional study of the topic and if it is being utilized as the base resource for a masters level class on the subject, it will provide the basis of the subject and the references will lead to even fuller understanding of the subject material. I bought this to have a ready reference for my job as a system security engineer and to have the basic process steps at my finger tips. My reading and

homework included in depth of the sections that were pertinent to what I was being tasked with and the references gave me the broad and deep dive that I needed to accomplish my tasks with superiority. My colleagues who were winging it, kept borrowing my book. My bosses saw it on my desk one day and remarked that it was part of their basic library for the field. Well written, Wiley provides the best as always!

Comprehensive and authoritative textbook on Systems Engineering. Provides an exhaustive number of illustrative examples along with an informative narrative complete with checklists and recommended content for required documentation. It is well-suited for a textbook for undergraduate students. In my case, I am an engineer and use this book as a regular reference to support my work. I purchased the Kindle version and soon followed up with a hardcopy of the book. You will not be disappointed.

I have several Systems Engineering reference books on my desk, but this is the ONE that I use nearly every single day. It is the most useful reference I have.

Clear and easy to read. Much better than some other options.

more than expected.

Well, let's put it this way: this is THE BOOK on Systems Engineering. There are good books out there, there are quite a few rather poor, and a few are really a must. And just above all of them lies this amazing encyclopedia of the Systems Engineering Analysis, second to none and seeing the rest from the heights and loneliness of the winner. There are some minor typos that do not deserve, and the current index order is somewhat convoluted, since it goes in further detail to the same concepts from up to three different points of view, but these factors must not obfuscate the universal truth behind this book, that reads: This is the best book ever on Systems Engineering. In fact, it is so damn good that you basically do not need any other SE book. If any, I would like to complement this one with a very different, but also fantastic and really actionable one, Process for System Architecture and Requirements Engineering from Derek Hatley, Peter Hruschka and Imtiaz Pirbhai, rather different from this one in style and content but also quite useful. But if you must decide, buy this one. It is just not an option: if you are working in the systems engineering field, you must use this book. I recommend it openly and heartedly to anyone. You cannot get disappointed with it.

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