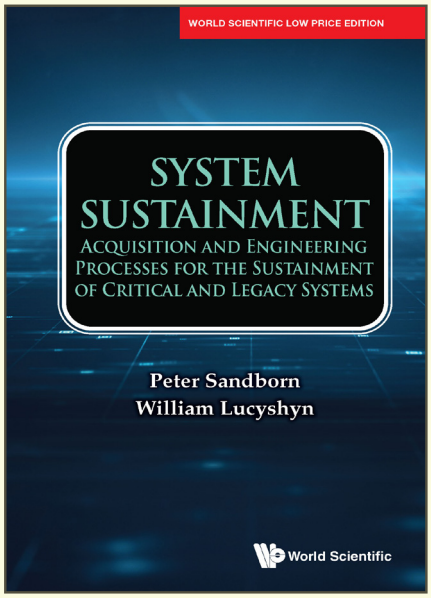
System Sustainment

Acquisition and Engineering Processes for the Sustainment of Critical and Legacy Systems



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ABOUT THE BOOK

"Sustainment" (as commonly defined by industry and government), is comprised of maintenance, support, and upgrade practices that sustain or improve the performance of a system and maximize the availability of goods and services while minimizing their cost and footprint or, more simply, the capacity of a system to endure. Sustainment is a multi-trillion-dollar enterprise for critical systems, in both government (infrastructure and defense) and industry (transportation, industrial controls, data centers, and energy generation).

This book is a mix of engineering, operations research, and policy sciences intended to provide students with a thorough understanding of the concept of sustainability and sustainable product life-cycles, and an appreciation of the importance of sustaining critical systems. It starts from the key attributes for system sustainment that includes data analytics, engineering analysis and the public policy needed to support the development of technologies, processes, and frameworks required for the management of sustainable processes and practices. The specific topics covered include: acquisition of critical systems, reliability, maintenance, availability, readiness, inventory management, supply-chain management and risks, contracting for sustainment, and various analysis methodologies (discounted cash flow analysis, discrete-event simulation and Monte Carlo methods). Practice problems are included at the end of each chapter.

READERSHIP

This book is intended to be a resource for advanced undergraduate and graduate students in engineering (aerospace, civil, electrical, mechanical, and engineering management), business, and public policy who want to understand the ramifications of, and processes for, system sustainment. It is also a useful reference for industry short courses provided to practicing professionals, whom in many cases, were not introduced to system sustainment during their education and are now thrust into the field with minimal preparation.

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