

Managing Technical Debt in Systems Engineering

Every systems engineer and project manager has experienced similar pains during system development: tasks take longer or are more complex than they should be, you have to correct or rework previous activities, or that shortcut you thought you had wasn't really a good idea. These are all symptoms of technical debt - the long-term consequences of decisions made for a short-term benefit. In today's fast-paced development world, we often make decisions to get a release out the door without consideration of the downstream impacts, which builds technical debt within the system. In recent years, technical debt has been blamed for disruptions from flight cancellations to cyber-attacks and cost companies billions of dollars. The good news is that technical debt is not inevitable and if it is properly managed, it can be a tool to help the system development. This book provides practicing systems engineers and project managers the tools and techniques necessary to manage technical debt within systems engineering projects. The reader will learn how to identify and manage technical debt to mitigate its impacts on the system throughout the three parts of this book. Part 1 introduces the concept of technical debt and develops a common ontology. Part 2 introduces the reader to the causes and types of technical debt and its applicability to the systems engineering lifecycle. Part 3 explains the technical debt management cycle, providing methods to identify, measure, and mitigate the effects of technical debt within the development of a project. Part 3 concludes with a definition of technical bankruptcy and a case study of a project that went technically bankrupt, leading to project cancellation.

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85,59 €

79,99 € (zzgl. MwSt.)

vorbestellbar, Erscheinungstermin ca.
Oktober 2026

Artikelnummer: 9783032303592

Medium: Buch

ISBN: 978-3-032-30359-2

Verlag: Springer Nature Switzerland AG

Erscheinungstermin: 29.10.2026

Sprache(n): Englisch

Auflage: Erscheinungsjahr 2026

Produktform: Gebunden

Gewicht: 580 g

Seiten: 260

Format (B x H): 160 x 241 mm

