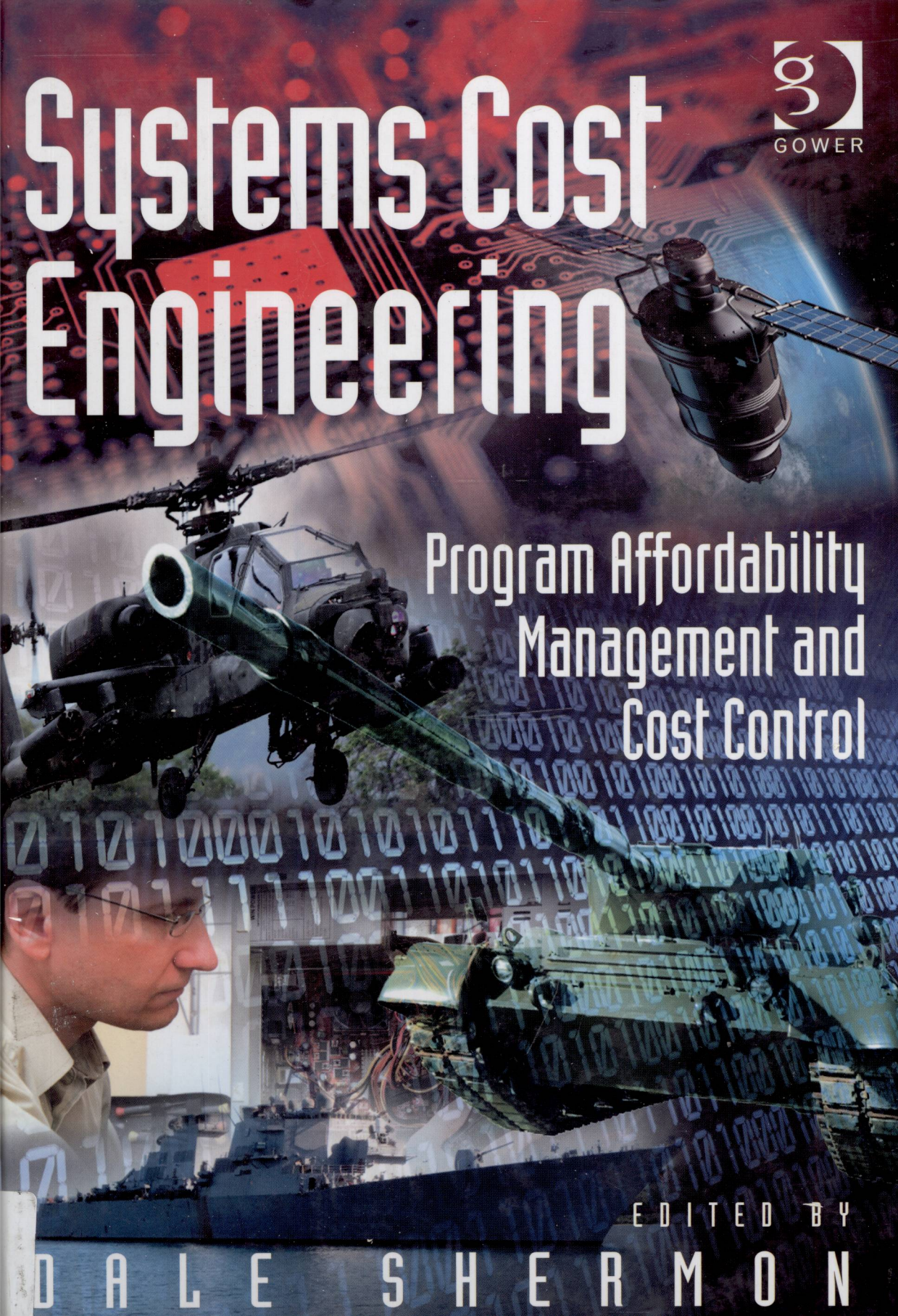
Systems Cost Engineering



Program Affordability Management and Cost Control

EDITED BY
DALE SHERMON

GOWER

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Systems Cost Engineering

Foreword

By Tony DeMarco
President, PRICE Systems

I am an entrepreneur, but my academic training was in mathematics and computer science, not business or accounting. One day I sat down with a pencil and a blue-lined paper pad (I could not find my graph paper) to craft a formula to determine the amount of near liquid cash we had to meet our operating needs. I laboured over income statements and balance sheets for a day before I found an equation that I knew would work. Proud of my accomplishment, I showed this financial revelation to our accountant. He promptly told me that it was the formula for Working Capital found in every beginners accounting text book. I learnt; there were better ways to have spent my day.

Program Affordability Management is the set of coordinated activities that determine whether or not an organization will be able to bear the cost of a program over the course of its life. It takes leadership, discipline and people armed with effective methods and tools to practise Program Affordability Management successfully. Great tools alone will not keep programs affordable. Tools must be applied as part of a credible process if estimates and analyses are to be accepted. We want people to be successful with the tools and solutions they use, so this book is a collection of methods with proven success.

Consider the needs of your organization and challenge people 'why are we not performing these activities?' Don't reinvent the wheel or accounting equations, learn from others. Familiarize yourself with this book's contents and keep it by your side. Your days will be more productive.

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This book was inspired during work on more than 25 years of conference and symposium papers written by customers and consultants on the applications of parametric cost models.

The inspiration to compile a book came from Dale Shermon, but the contents have been gathered from the team of consultants at PRICE Systems with a collective Cost Engineering practical knowledge in excess of 300 years.

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'The team is greater than the sum of its parts.'

Glossary

Calibration	The process of tuning a commercial parametric model to an individual organization by producing the productivity metrics of historical projects.
Commercial Off the Shelf (COTS)	Referring to items which are purchased or built to licence or to the design of a customer. They can be either software or hardware items.
Manufacturing Complexity	An empirical factor comprising the technology implicit in a product and the productivity of its manufacturer. Most easily perceived as a normalized cost density in a hardware parametric model.
Organizational Breakdown Structure (OBS)	This is a formal arrangement of resources (labour and non-labour) which will need to be consumed or used to ensure successful completion of the project.
Organizational Productivity	The calibration factor for a software parametric model which represented the efficiency or productivity of an organization in software projects.

Product Breakdown Structure (PBS)	This is a formal arrangement of technologies or software which will need to be acquired or built to ensure successful completion of the project.
Program	An alternative description of a project taking into account all its facets including the budget and schedule.
Programme	A software code used to make computers perform a useful function.
Work Breakdown Structure (WBS)	This is a formal arrangement of activities or tasks which will need to be conducted to ensure successful completion of the project.

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1

Introduction

Cost Engineering requires the fusion of three elements: processes, cost models and skilled people. When these three elements are combined efficiently, a capability is achieved that will profoundly influence the projects that an organization embarks upon. When these elements are realized in the organization, then cost estimating naturally leads to project control, which enables the development of corporate knowledge and the re-use of what has been learned in the cost estimates of the future.

Program Affordability Management (PAM) (see Figure 1.1) is a seamless union of these elements that results in what we call True Program Success. How do we know when we have achieved True Program Success? When we can confidently say, no program will ever:

- be conceived without a credible analysis of alternatives;
- be initiated with insufficient funding because of inaccurate initial estimates and inaccurate quantification of the risks;
- be deterred from its mission because of lack of credible cost analysis within the program's management;
- be deterred from its mission because of lack of integration between Earned Value Management and Cost Estimating and Analysis;
- be deterred from its mission because knowledge of cost and productivity metrics is not being shared among program teams and with other programs;
- be deterred from its mission because of surprise cost overruns and schedule delays.

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