

Contents

| | | |
|------|---|-----|
| 1 | Space Activities: A Peculiar Economical, Political, and Industrial Sector | 1 |
| 1.1. | Brief History of the First Space Age..... | 2 |
| 1.2. | Brief History of the Space Activities in Europe | 8 |
| 1.3. | Brief History of the Space Activities in the Rest of the World..... | 10 |
| 1.4. | The “Governance” of the Activities in Space..... | 11 |
| 1.5. | Definition and Segmentation of the “Space Market” in the World..... | 46 |
| 2 | Space Program Management | 59 |
| 2.1. | Characteristics of Space Programs..... | 60 |
| 2.2. | Methods of Defining and Managing Space Programs | 65 |
| 2.3. | Implementing Space Programs | 66 |
| 2.4. | Start-Up of a Space Program | 74 |
| 2.5. | Development Phases of a Space Program..... | 83 |
| 3 | Marketing of Space Programs..... | 97 |
| 3.1. | Notion of Marketing | 97 |
| 3.2. | Function of Marketing in a Space Program | 98 |
| 3.3. | Marketing of Programs and Services..... | 99 |
| 3.4. | Offer in the Marketing of a Space Program..... | 101 |
| 3.5. | The Space Program Contract | 110 |
| 4 | Methods and Tools of Space Programs Management..... | 117 |
| 4.1. | Organization of the Program Team..... | 118 |
| 4.2. | Management of Performance and Margins..... | 122 |
| 4.3. | Configuration Management | 130 |
| 4.4. | Assembly, Integration, and Test Management..... | 139 |
| 4.5. | Planning and Schedule Management..... | 150 |
| 5 | Risk Management of Space Programs | 157 |
| 5.1. | The Concept of Risk | 158 |
| 5.2. | Technical “Reliability and Security” of Space Systems | 162 |
| 5.3. | Financial “Reliability and Security” of Space Systems..... | 165 |
| 6 | Cost Management in Space Programs | 171 |
| 6.1. | Basic Elements for Economic Evaluations of Space Programs..... | 171 |
| 6.2. | Definitions and Criteria..... | 173 |
| 6.3. | The Business Plan | 184 |

| | |
|--|-----|
| 6.4. Example of Cost Analysis for a Space Launcher..... | 195 |
| 6.5. Example of Cost Analysis for a Satellite | 210 |
| 6.6. Criteria for Reducing Costs | 216 |
| References for Chapter 6 | 219 |
| 7 Financial Management of Space Programs..... | 221 |
| 7.1. Forms of Financing for Space Programs | 221 |
| 7.2. Private Financing | 222 |
| 7.3. “Project Financing” for Space Programs | 223 |
| 8 Management of Small, Low-Cost Space Programs: | |
| A New Paradigm..... | 247 |
| 8.1. Small Space in Perspective | 247 |
| 8.2. Theory and Practice | 248 |
| 8.3. Scaling Management..... | 248 |
| 8.4. When Complexity Exceeds the Small Team Capability | 252 |
| 8.5. Staffing the Small Space Project..... | 252 |
| 8.6. How Small Teams Function to Reduce Cost | 254 |
| 8.7. The Integrated Team | 257 |
| 8.8. Parts Selection..... | 259 |
| 8.9. Testing..... | 260 |
| 8.10. Integration | 263 |
| 8.11. Elements of the Small Program Plan | 263 |
| 8.12. Case Studies | 267 |
| 8.13. The Requirements Trap..... | 275 |
| 9 Examples of Management Applied to Different Space Programs | 277 |
| 9.1. Large Civil Governmental Satellite Program: | |
| The NASA Advanced Communication Satellite Program | |
| Advanced Communications Technology Satellite | 277 |
| 9.2. Multiple Satellite Production Programs: Risk and Organizing | |
| Principles in the OrbComm Experience | 297 |
| 9.3. Management of Medium-Sized US Space Programs for DoD | 315 |
| Acronyms..... | 331 |
| Authors’ Short Biographies | 337 |
| Bibliography | 339 |
| Websites | 341 |
| Index | 343 |



<http://www.springer.com/978-1-4614-3754-3>

Space Program Management

Methods and Tools

Spagnulo, M.; Fleeter, R.; Balduccini, M.; Nasini, F.

2013, XXI, 352 p. 192 illus., 116 illus. in color.,

Hardcover

ISBN: 978-1-4614-3754-3