

Table of Contents

Foreword	V
Preface	IX
Table of Contents.....	XV
List of Contributors.....	XIX
Part 1 Foundations and Frameworks	1
1 Value-Based Software Engineering: Overview and Agenda	3
1.1 Overview and Rationale	3
1.2 Background and Agenda	7
1.3 A Global Road Map for Realizing VBSE Benefits	10
1.4 Summary and Conclusions	11
2 An Initial Theory of Value-Based Software Engineering	15
2.1 Introduction	15
2.2 A “4+1” Theory of Value-Based Software Engineering	18
2.3 Using and Testing the VBSE Theory: Process Framework and Example	23
2.4 VBSE Theory Evaluation	31
2.5 Conclusions and Areas for Further Research	33
3 Valuation of Software Initiatives Under Uncertainty: Concepts, Issues, and Techniques	39
3.1 Introduction	39
3.2 Issues in Valuation	40
3.3 Valuation of Uncertain Projects with Decision Trees.....	45
3.4 Real Options Theory.....	52
3.5 Summary and Discussion	60
4 Preference-Based Decision Support in Software Engineering.....	67
4.1 Introduction	67
4.2 Decisions with Multiple Criteria and Software Engineering.....	69
4.3 Multicriteria Decision Methods.....	71
4.4 Incomplete Information and Sensitivity Analysis.....	82
4.5 Summary and Conclusions	84
5 Risk and the Economic Value of the Software Producer	91
5.1. Introduction	91
5.2. The Value of the Firm	92

5.3. The Time Value of Money	92
5.4. Financial Risk	94
5.5. Prediction and the Value of the Firm.....	95
5.6. Multi-Project Firms and Economic Value.....	96
5.7. The Economic Cost of Extended Time-to-Market	96
5.8. Financial Risk and Software Projects	97
5.9 Predictability and Process Improvement	99
5.10 Arriving at a Risk Premium for Software Projects.....	100
5.11 Computing the Financial Value of Improved Predictability.....	101
5.12 An Illustrative Example.....	102
5.13 Conclusions	103
Part 2 Practices.....	107
6 Value-Based Software Engineering: Seven Key Elements and Ethical Considerations	109
6.1 Benefits Realization Analysis.....	109
6.2 Stakeholder Value Proposition Elicitation and Reconciliation.....	111
6.3 Business Case Analysis	113
6.4 Continuous Risk and Opportunity Management	114
6.5 Concurrent System and Software Engineering.....	117
6.6 Value-Based Monitoring and Control	119
6.7 Change as Opportunity	122
6.8 Integrating Ethical Considerations into Software Engineering Practice....	124
6.9 Getting Started Toward VBSE	128
7 Stakeholder Value Proposition Elicitation and Reconciliation	133
7.1 Introduction	133
7.2 Negotiation Challenges	134
7.3 The EasyWinWin Requirements Negotiation Support.....	138
7.4 Possible Extensions to the EasyWinWin Approach	147
7.5 Conclusions	151
8 Measurement and Decision Making	155
8.1 Introduction	155
8.2 Models of Measurement and Decision Making.....	156
8.3 Decision Making Behavior.....	162
8.4 Decision Making Behavior in Groups	166
8.5 Measurement and Analysis for Decision Making.....	167
8.6 Decision Support in a VBSE Framework.....	170
8.7 Conclusion.....	173
9 Criteria for Selecting Software Requirements to Create Product Value: An Industrial Empirical Study	179
9.1 Introduction	179
9.2 Background	181

9.3 Research Approach.....	185
9.4 Survey Results and Analysis	189
9.5 Conclusions and Further Work.....	196
10 Collaborative Usability Testing to Facilitate Stakeholder Involvement.....	201
10.1 Introduction	201
10.2 Usability Testing	203
10.3 Collaboration Tools and Techniques for Usability Testing.....	205
10.4 Research Approach.....	208
10.5. The e-CUP process.....	210
10.6 Application of e-CUP	213
10.7 Conclusion.....	217
11 Value-Based Management of Software Testing.....	225
11.1 Introduction	225
11.2 Taking a Value-Based Perspective on Testing	226
11.3 Practices Supporting Value-Based Testing.....	233
11.4 A Framework for Value-Based Test Management.....	236
11.5 Conclusion and Outlook.....	241
Part 3 Applications.....	245
12 Decision Support for Value-Based Software Release Planning.....	247
12.1 Introduction	247
12.2 Background.....	248
12.3 Value-Based Release Planning.....	251
12.4 Example.....	255
12.5 Conclusions and Future Work	258
13 ProSim/RA – Software Process Simulation in Support of Risk Assessment	263
13.1 Introduction	263
13.2 Software Process Simulation.....	266
13.3 SPS-Based Risk Analysis Procedure	269
13.4 Case Example	271
13.5 Discussion and Future Work	278
14 Tailoring Software Traceability to Value-Based Needs	287
14.1 Introduction	287
14.2 Video-on-Demand Case Study	290
14.3 Testing-Based Trace Analysis	293
14.4 Trace Analysis through Commonality.....	299
14.5 The Tailorable Factors.....	302
14.6 Conclusions	306

15 Value-Based Knowledge Management: the Contribution of Group Processes.....	309
15.1 Introduction	309
15.2 Managing Knowledge	310
15.3 Example: Postmortem Review and Process Workshop	313
15.4 Discussion	318
15.5 Conclusion and Further Work	322
16 Quantifying the Value of New Technologies for Software Development	327
16.1 Introduction	327
16.2 Background	329
16.3 Applications	330
16.4 Impact Assessment Methodology.....	335
16.5 Results.....	338
16.6 Related Work.....	341
16.7 Discussion	341
17 Valuing Software Intellectual Property.....	345
17.1 Introduction	345
17.2 Software Intellectual Property Protection Mechanisms.....	346
17.3 Licensing.....	349
17.4 Valuation Process	350
17.5 Valuation Framework for Intellectual Property.....	356
17.6 Potential Uses of the Valuation Framework.....	363
17.7 Future Shock	363
17.8 Summary and Conclusions	364
Glossary.....	367
List of Figures	381
List of Tables	383
Index.....	385



<http://www.springer.com/978-3-540-25993-0>

Value-Based Software Engineering

Biffi, S.; Aurum, A.; Boehm, B.; Erdogmus, H.;

Grünbacher, P. (Eds.)

2006, XXII, 388 p., Hardcover

ISBN: 978-3-540-25993-0