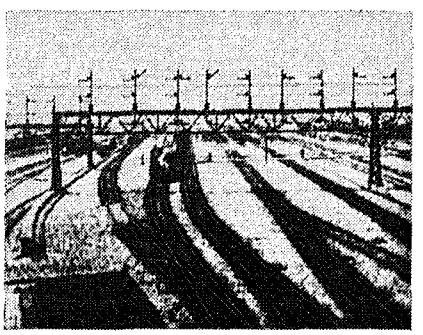
Software Configuration Management Patterns

Effective Teamwork, Practical Integration



STEPHEN P. BERCZUK
with BRAD APPLETON

Addison-Wesley

Boston • San Fransisco • New York • Toronto • Montreal
London • Munich • Paris • Madrid
Capetown • Sydney • Tokyo • Singapore • Mexico City

Contents

List of Figures xi
Foreword xiii
Preface xvii
Contributor's Preface xxiii
Acknowledgments xxv
Introduction xxvii

PART I BACKGROUND 1

Chapter 1. Putting a System Together 3
Balancing Stability and Progress 4
The Role of SCM in Agile Software Development 7
SCM in Context 8
SCM as a Team Support Discipline 11
What Software Configuration Management Is 13
The Role of Tools 15
The Larger Whole 16
This Book's Approach 16
Unresolved Issues 17
Further Reading 17

Chapter 2. The Software Environment 19
General Principles 20
What Software Is About 22
The Development Workspace 25
Architecture 25
The Organization 28
The Big Picture 30
Further Reading 31

Chapter 3. Patterns 33
About Patterns and Pattern Languages 34
Patterns in Software 36
Configuration Management Patterns 37
Structure of Patterns in This Book 39
The Pattern Language 40
Overview of the Language 41
Unresolved Issues 45
Further Reading 45

PART II THE PATTERNS 47

Chapter 4. Mainline 49
Simplify Your Branching Model 54
Unresolved Issues 57
Further Reading 57

Chapter 5. Active Development Line 59
Define Your Goals 63
Unresolved Issues 66
Further Reading 66

Chapter 6. Private Workspace 67
Isolate Your Work to Control Change 72
Unresolved Issues 77
Further Reading 77

Chapter 7. Repository **79**
One Stop Shopping 82
Unresolved Issues 86
Further Reading 86

Chapter 8. Private System Build **87**
Think Globally by Building Locally 91
Unresolved Issues 95
Further Reading 95

Chapter 9. Integration Build **97**
Do a Centralized Build 100
Unresolved Issues 102
Further Reading 102

Chapter 10. Third Party Codeline **103**
Use the Tools You Already Have 106
Unresolved Issues 110
Further Reading 110

Chapter 11. Task Level Commit **111**
Do One Commit per Small-Grained Task 113
Unresolved Issues 114

Chapter 12. Codeline Policy **117**
Define the Rules of the Road 120
Unresolved Issues 122
Further Reading 122

Chapter 13. Smoke Test **123**
Verify Basic Functionality 125
Unresolved Issues 127
Further Reading 127

Chapter 14. Unit Test 129
Test the Contract 131
Unresolved Issues 132
Further Reading 133

Chapter 15. Regression Test 135
Test for Changes 138
Further Reading 139

Chapter 16. Private Versions 141
A Private History 144

Chapter 17. Release Line 147
Branch before Releasing 151
Further Reading 151

Chapter 18. Release-Prep Code Line 153
Branch Instead of Freeze 155
Unresolved Issues 156

Chapter 19. Task Branch 157
Handling Long-Lived Tasks 158
Use Branches for Isolation 160

Chapter 20. Referenced Patterns 163
Named Stable Bases 164
Daily Build and Smoke Test 164

Appendix A. SCM Resources Online 165
The Configuration Management Yellow Pages 165
CM Crossroads—Online Community and Resource Center for CM Professionals 165
CM Today—Daily Configuration Management News 166

UCM Central—Unified Configuration Management 166
ACME—Assembling Configuration Management Environments (for Software) 166
The Software Engineering Institute's SCM Publications 167
Steve Easterbrook's Configuration Management Resource Guide 167
The Software Configuration Management FAQ 167
The Association for Configuration and Data Management 168
Software Engineering Resource List for Software Configuration Management 168
R.S. Pressman and Associates Software Engineering Resources for SCM 168
SEweb Software Configuration Management Resources at Flinders University 168
Pascal Molli's "CM Bubbles" SCM Resources Page 168
The Usenet Newsgroup comp.software.config-mgmt 169

Appendix B. Tool Support for SCM Patterns 171
VSS—Visual Source Safe 173
CVS—The Concurrent Versions System 175
Perforce 177
BitKeeper 179
AccuRev 181
ClearCase—base functionality (non-UCM) 183
ClearCase—Unified Change Management (UCM) 185
CM Synergy 186
StarTeam 188
PVCS Dimensions 189
PVCS Version Manager 190
MKS Integrity (Enterprise edition) 192
Further Reading 193

Photo Credits 195

About the Photos 197

Bibliography 199

Index 207