ALAN S. KOCH

## AGILE SOFTWARE DEVELOPMENT

**Evaluating the Methods for Your Organization** 

Foreword by Kent Beck	•	• .		A.	Λl
Foreword by Mark Paulk				XX	iii
Preface				XX	νi
Part I Adoption Considerations			•		1
Introducing the Agile Methods	•			•	3
Historical and background information					3
The Agile methods, generally					4
Agility					5
Change					5
Planning					5
Communication					6
Learning					6
The Agile methods, specifically					7
Reference			,		8
Considering Your Organizational Culture					9
Hierarchical versus cooperative organizations					9
Hierarchical organizations					10
Cooperative organizations					10
Considerations: Hierarchical versus cooperative					I
Controlling change versus reacting to it					1
Controlling change					1
Reacting to change					1.
Considerations: Controlling versus reacting					1.
					13

	15 16 18 19
	18
	19
	21
	21
	22
	23
	24
	25
	26
	26
	29
	29
	31
	32
	33
	33
	33
	34
	34
	34
	35
	37
	37
	38
	39
	39
	40
	41
	41
	40
ns .	43
ns .	<b>43</b>

ίX

	Evaluating the practices  Compiling the results  Final steps		46 48 49
	Part II Value: "Individuals and Interactions over Processes and Tools"		51
8	About People, Processes, and Tools		53
	People versus processes versus tools		53
	The role of people		54
	The role of processes		55
	The role of tools		57
	Balancing people, process, and tools		58
9	Motivated Individuals and Self-Organizing Teams	•	61
	Agile Principles		61
	Motivated individuals		61
	Self-organizing teams		62
	Agile practices		62
	Adaptive Software Development		63
	The Adaptive Conceptual Model: Project stakeholders as		
	independent agents		63
	The Adaptive Development Model: Speculate: Project initiation and adaptive planning		63
	The Adaptive (Leadership-Collaboration) Management Model		64
	Dynamic System Development Method (DSDM)		64
	Principle 2: DSDM teams must be empowered to make decisions		64
	Extreme Programming (XP)		64
	The Planning Game		64
	Collective ownership		65
	Feature-Driven Development		65
	Class (code) ownership		65
	Feature teams		65
	Lean Software Development (LD)		66
	Empower the Team: Tool 13, Self-determination		66
	Empower the Team: Tool 14, Motivation		66
	Scrum		66
	Scrum teams		66
	Adoption implications		67
	Trusting the technical team		67
	Staffing with "motivated individuals"		68

	Team structure and roles	68
	Pair Programming	69
	Chief Programmer	69
	Method Coach	70
	Project Manager	71
	Motivated individuals and self-organizing teams	71
10	Face-to-Face Communication	73
	Agile Principle	73
	Face-to-face communication	73
	Agile practices	74
	Extreme Programming	74
	Facilities Strategy	74
	Pair Programming	75
	On-Site Customer	76
	The Planning Game	76
	Scrum	76
	Daily Scrum Meetings	76
	Adoption implications	77
•	Richness	77
	Memory	79
	Persistence	79
	Availability	80
	Communication	81
	Sustainable Pace	83
	Agile Principle	83
	Sustainable pace	83
	Agile practices	84
	Extreme Programming (XP)	84
	40-hour week	84
	Adoption implications	84
	Overtime versus the Agile methods	85
	Initial analysis	85
	Incremental development	86
	Testing	87
	Integration	87
	A sustainable pace	88
12	The Unstated Principle: Appropriate Processes	
	and Tools	00

90

90

Agile practices

Reature-Driven Development (FDD)	90
Configuration Management	90
ean Software Development (LD)	90
Amplify Learning: Tool 5, Synchronization	90
Deliver as Fast as Possible: Tool 10, Pull Systems	92
Deliver as Fast as Possible: Tool 11, Queuing Theo	ry 92
Deliver as Fast as Possible: Tool 12, Cost of Delay	92
See the Whole: Tool 21, Measurements	93
Adoption implications	93
Processes	93
Configuration Management	94
Code control	94
Establishing baselines	95
Change requests	95
Configuration integrity	96
Build automation	96
Test automation	97
Processes and tools	97
Reference	97
Part III Value: "Working Software over Comp Documentation"	orehensive 99
Value: "Working Software over Composition"	99
Value: "Working Software over Composition"	99
Value: "Working Software over Comp Documentation"	99 are Project . 101
Value: "Working Software over Comp Documentation"	99  are Project . 101  101  102
Value: "Working Software over Comp Documentation"	99  are Project . 101  101  102  103
Value: "Working Software over Comp Documentation"	99  are Project . 101  101  102
Value: "Working Software over Comp Documentation"	99  are Project . 101  101  102  103  104
Value: "Working Software over Comp Documentation"	99  are Project . 101  101  102  103  104
Value: "Working Software over Comp Documentation"	are Project . 101  101  102  103  104  ware 105
Value: "Working Software over Comp Documentation"	are Project . 101  101  102  103  104  ware 105
Value: "Working Software over Comp Documentation"	are Project . 101 101 102 103 104  :ware 105
Value: "Working Software over Comp Documentation"	are Project . 101  101  102  103  104  Eware 105  105  106
Value: "Working Software over Comp Documentation"	are Project . 101 101 102 103 104  ware 105 105 106 107
Value: "Working Software over Comp Documentation"	are Project . 101  101  102  103  104  Eware 105  106  107
Value: "Working Software over Comp Documentation"	are Project . 101  101  102  103  104  Eware 105  106  107  107  107

хii

3) Frequent	delivery	109
, ,	r business purpose	109
	and incremental development	110
Extreme Progran		110
Small release		110
Continuous i	integration	110
Feature-Driven I		111
Developing b	<del>-</del>	111
Regular build		111
<del>-</del>	isibility of results	111
Lean Software D	evelopment	112
	rning: Tool 3, Feedback	112
	rning: Tool 4, Iterations	112
Scrum	•	113
Sprint		113
Sprint Review	W	113
Adoption implica	ations	114
Time-boxed		114
Continuous i	-	115
Incremental	_	115
Incremental	development versus hacking	116
Deliver work	ring software to whom?	116
Minimizing d	documentation	117
Incremental deve	elopment	118
Reference		118
Negotiation''	comer Collaboration over Contract	. 119
Types of custome	<u>*</u>	121
Role of contracts		
Role of ongoing (		122
	acts and collaboration	123 124
		147
Daily Collab	oration of All Stakeholders	. 127
Agile Principle		127
All Stakeholo	ders Must Work Together Daily	127
Agile practices		128
Adaptive Softwar	re Development (ASD)	128

Adaptive (Leadership-Collaboration) Management Model	120
	129
Dynamic Systems Development Method (DSDM)	129
Active user involvement	130
Collaborative and cooperative approach	130
Extreme Programming (XP)	130
On-site customer	130
Lean Software Development (LD)	131
Build Integrity In: Tools 17 and 18, Perceived and Conceptual In	ntegrity 131
See The Whole: Tool 22, Contracts	131
Scrum	131
Product Backlog	131
Adoption implications	132
Establishing requirements	132
Managing requirements changes	133
Ensuring product quality	133
Acceptance	134
The reluctant customer	135
Project course corrections	135
Contract as a weapon	136
Customer collaboration	137
Reference	100
Part V	137 <b>J</b>
Part V Value: "Responding to Change over Following a Plan"	
Part V Value: "Responding to Change over Following a Plan"	141 141 143 143 144
Part V Value: "Responding to Change over Following a Plan"	141 141 143 144 144 145 147

	tο		

Adaptive Life Cycle		148
Dynamic Systems Development Method (DSDM)		148
All changes are reversible		148
Requirements are baselined at a high level		149
Extreme Programming (XP)		150
Metaphor		150
Refactoring		150
Feature-Driven Development (FDD)		151
Domain Object Modeling		151
Lean Software Development (LD)		151
Decide as Late as Possible: Tool 7, Options Thinking, Tool 8, The Last Responsible Moment, Tool 9, Making Decisions		152
Build Integrity In: Tool 19, Refactoring		152
Scrum		153
Sprint Planning Meeting		153
Adoption implications		153
Incremental planning		154
Tracking and reporting progress		154
When the project deviates from the plan		15
Handling customer change requests		15
Changes injected by the development team		15
Welcoming change		150
Reference		15
Part VI The Unstated Value: Keeping the Process Agile		159
Maintaining the Process		161
maintaining the Flocess		
Agile is not antiprocess		16
-		161 162
Agile is not antiprocess		162
Agile is not antiprocess You are using a process Process efficiency and effectiveness		16: 16:
Agile is not antiprocess You are using a process		16: 16: 16:
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?	•	162 162 163 164
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?  Continuous process improvement	• .	162 163 164 164
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?  Continuous process improvement  Technical Excellence	• .	163 163 164 165 165
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?  Continuous process improvement  Technical Excellence	• .	
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?  Continuous process improvement  Technical Excellence	• .	162 163 164 165 165 166
Agile is not antiprocess  You are using a process  Process efficiency and effectiveness  Mary, Mary, quite contrary, how does your [process] grow?  Continuous process improvement  Technical Excellence	• .	162 163 164 <b>165</b> 165

	Testing throughout the life cycle	167
	Extreme Programming (XP)	168
	Test First	168
	Coding Standards	169
	Feature-Driven Development (FDD)	170
	Inspections	170
	Lean Software Development (LD)	170
	Amplify Learning: Tool 6, Set-Based Development	170
	Empower the Team: Tool 15, Leadership	170
	Empower the Team: Tool 16, Expertise	171
	Build Integrity In: Tool 20, Testing	171
	Scrum	172
	Scrum Master	172
	Adoption implications	172
	Project roles	173
	Developers' attention to quality	174
	Technical excellence	174
	Reference	175
21	Simplicity	. 177
	Agile Principle	177
	Simplicity: Maximizing work not done	177
	Agile practices	177
	Extreme Programming (XP)	178
	Simple Design	178
	Lean Software Development (LD)	178
	Eliminate Waste: Tool 1, Seeing Waste and Tool 2, Value Stream Mapping	179
	Adoption implications	180
	Object-Orientation	180
	Identifying the expendable	181
	Simplicity	182
	Reference	182
22	Retrospectives	. 183
	Agile Principle	183
	Regular team retrospectives	183
	Agile practices	184
	Adaptive Software Development (ASD)	184
	Learn: Quality Review: Postmortems	184
	Adoption implications	185
	a amount and a second conservation	-

xvi Contents

	,	
	When to hold a retrospective	185
	How to capitalize on a retrospective	186
	Process change in mid-project	186
	Conclusion	187
	Part VII The Adoption Decision	189
23	Making the Adoption Decision	191
	Compiling your "Evaluating Agile Methods Workbook" data	191
	Conclusions about Agile Values and Principles	192
	We have come to value individuals and interactions over processes and tools	193
	We have come to value working software over comprehensive documentation	195
	We have come to value customer collaboration over contract negotiatio	n 196
	We have come to value responding to change over following a plan	197
	The unstated value: Keeping the process agile	198
	Agile Values in your organization	200
	Conclusions about the Agile Methods and Practices	200
	Adaptive Software Development	200
	Dynamic Systems Development Method	201
	Extreme Programming	202
	Feature-Driven Development	203
	Lean Software Development	203
	Scrum	205
	The Agile Methods in your organization	205
	Marketing your conclusions in your organization	206
	Agreeing together on an action plan	207
24	Adopting New Practices	209
	Three critical things to do: communicate, communicate, communicate	209
	1. Communicate while making the decision.	210
	2. Communicate about the decision you made.	210
	3. Communicate regularly about the status of the change effort.	211
	Crafting your custom Agile Method	212
	Training those who will be affected	213
	Pilot testing the new method	214
	Just-in-time training	214
	Expert on call	214
	Celebrate project milestones	214
	Improving the Agile Method	215

Evaluating the l	Effects of Your Agile Method `
Project performance	
Management accepta	ance
Customer relationsh	
Team satisfaction	
Continuously impro	ving your Agile Method
Appendix Intro	duction
Appendix A The Agile Mani	festo
Reference	
Appendix B The 12 Principl	es of Agile Methods
The 12 Principles of	Agile Methods
Our highest prior	rity is to satisfy the customer through early and very of valuable software.
_	ng requirements, even late in development. Agile is change for the customer's competitive advantage.
_	software frequently, from a couple of weeks to a coup a preference to the shorter time scale.
Business people at the project.	and developers must work together daily throughout
	ound motivated individuals. Give them the environmers area, and trust them to get the job done.
	nt and effective method of conveying information to a pment team is face-to-face conversation.
·	re is the primary measure of progress.
•	promote sustainable development. The sponsors,
developers, and indefinitely.	users should be able to maintain a constant pace
agility.	ntion to technical excellence and good design enhance
essential.	art of maximizing the amount of work not done —is
	ctures, requirements, and designs emerge from self-
organizing teams	
organizing team: At regular interv	s. vals, the team reflects on how to become more effectiv adjusts its behavior accordingly.

xviii Contents

Appendix C Adaptive Software Development	233
The Adaptive Life Cycle	233
Speculate: Project initiation	234
Learning Loop	234
Speculate: Adaptive Cycle Planning	235
Collaborate: Concurrent component engineering	235
Learn: Quality Review	235
Learn: Final Q/A and release	236
ASD's conceptual framework	236
Project stakeholders as independent agents	236
The Adaptive (Leadership-Collaboration) Management Model	236
ASD	238
References	238
Appendix D  Dynamic Systems Development Method	239
The DSDM process	239
Nine principles of DSDM	241
Principle 1: Active user involvement is imperative.	241
Principle 2: DSDM teams must be empowered to make decisions.	241
Principle 3: The focus is on frequent delivery of products.	241
Principle 4: Fitness for business purpose is the essential criterion for acceptance of deliverables.	242
Principle 5: Iterative and incremental development is necessary to converge on an accurate business solution.	242
Principle 6: All changes during development are reversible.	242
Principle 7: Requirements are baselined at a high level.	242
Principle 8: Testing is integrated throughout the life cycle.	243
Principle 9: A collaborative and cooperative approach between all stakeholders is essential.	243
Reference	243
Appendix E Extreme Programming	245
XP's 12 practices	245
The Planning Game	245
Small releases	245
Metaphor	246
Simple design	246
Test First	246
Refactoring	247

Pair Programming	247
Collective ownership	247
Continuous integration	247
40-hour week	248
On-site customer	248
Coding standards	248
The XP Facilities Strategy	248
References	248
Appendix F Feature-Driven Development	249
	240
FDD practices	249 249
Domain Object Modeling	249
Developing by feature	250
Class (code) ownership	250
Feature teams	250
Inspections	251
Regular build schedule	<i>-</i> 251
Configuration Management	251
Reporting/Visibility of results	
References	252
Appendix G Lean Software Development	253
<u>-</u>	
Lean Software Development principles and tools	253 253
Eliminate Waste	254
Amplify Learning  Decide as Late as Possible	254
Deliver as Fast as Possible	255
	255
Empower the Team  Build Integrity In	256
See the Whole	256
	256
References	200
Appendix H Scrum	257
Scrum practices	257
The Scrum Master	257
Product Backlog	258
Scrum Teams	258
Daily Scrum Meetings	259
Sprint Planning Meeting	259

## Sprint Review References

About the Author . . . . . . . . . . . . . . . . .

269

259

260

260