

Delivering Successful Projects with TSPSM and Six Sigma

A Practical Guide to Implementing Team Software ProcessSM



Mukesh Jain



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Preface

This book gives an overview of Team Software ProcessSM (TSPSM) and real-world details about my experience in successfully implementing TSP and Six Sigma in Microsoft. It also shows how geographically widely distributed new teams were able to deliver on time a very high quality product (two thirds of them with zero defects) with a decent work–life balance. This book highlights real-world scenarios that I experienced while coaching development teams on TSP. It also gives some tips and techniques to follow while implementing TSP.

This will be a handy book on understanding how some of the problems faced by the software industry can be solved using TSP. It gives an overview of TSP and shares actual real-world experience in implementing TSP, telling how some mistakes can be avoided to get the best out of a TSP implementation.

In this book, you will see how to effectively manage the development of a software project and deliver it successfully in line with expectations.

When I mention quality to software engineers, they talk about how impossible it is to eliminate defects from software: “Software will have defects no matter what process you follow.” It’s taken for granted, and since nobody acts to improve the situation, we make it horribly true. This goes, too, for software projects; I get the same reaction from project managers and a lot of time it’s the blame game: “Software project got delayed because software engineers did not do a good job in development” or “Software project timeline was unrealistic—it’s the project manager’s fault.” It’s time we review the situation and enable software engineers and project managers to be effective in software development process—end-to-end.

Delivering successful projects means “the ability to produce high quality software within budget and on time—consistently.” Clients expect the software applications to meet their expectations, to be delivered within budget and expected timeline. The project team strives to delight the clients by meeting or exceeding the expectations, attracting new business, and at the same time making a reasonable profit. If you are able to deliver a project that meets both clients’ and project team’s goals, the project can be considered successfully delivered.

Why I Wrote This Book

In my career, I had the opportunity to work in various areas including ISO 9001, CMM/CMMi level 3,4,5, and Six Sigma with software developers, testers, and project managers, finding that the problems are pretty much the same for any organization, groups, teams, or individuals. We needed something to do at the grass-roots level to prevent recurring problems. I tried coaching people with some of the techniques of Six Sigma and blending these with software engineering. I started seeing dramatic results. It was the mind set for change and the passion for improvement and excellence that made the difference. This was not possible without the measurement system and framework.

Then I was exposed to TSP/PSP, and I could relate it to what I was doing. It had a good measurement framework and process to achieve a high-quality product and project management. I then started evangelizing it within Microsoft India, and we began seeing good results.

The knowledge I had from implementing TSP/PSP and Six Sigma was with me and a few of my colleagues, then I started doing presentations in several international conferences. I got a good response and several requests for sharing my knowledge. That is when I thought of writing a book to offer these ideas to a wider audience. With the help of John Wyzalek and Auerbach Publications I was able to get this moving, and put my thoughts onto paper in this book.

How Is the Book Organized?

The book is organized in a natural flow starting with current challenges in the software industry, software project management, and then giving an overview of PSP and TSP.

Next, it goes in depth into the TSP launch process and talks about how to go about a launch, with notes on points needing attention—do's and don'ts, etc. It can be used as a ready reference along with the TSP material provided by SEI.

Within the appropriate chapters, I have also added images and details for using the TSP tool. This can be used as a user guide for working with the TSP tool.

Toward the end of the book the chapter on Six Sigma gives an overview of the methodology and how to blend Six Sigma with the software development processes.

Who Should Read This Book?

This book is intended for professionals who are involved with software development and software process improvement. It will be useful for the following audience: developers, testers/QA, program managers, project managers, TSP coaches, quality assurance engineers, improvement specialists, process champions, etc. With this

book, they will be able to look at their development process from a different angle and will be able to relate TSP concepts to the problems they are facing. This book will serve as a guiding document for them to implement TSP, to avoid mistakes others have made, and to get the best out of TSP. Organizations will be able to save time and money, and at the same time improve the quality of the output and customer satisfaction, driving more business.

There is no prereading required to understand this book. It covers all the basic concepts related to PSP and TSP. This book is not a replacement for formal training related to PSP and TSP, and is not intended to show a radically different approach to software development.

Acknowledgments

I started using Personal Software ProcessSM (PSPSM) and Team Software ProcessSM (TSPSM) in mid 2004, and received good support and guidance from SEI, especially from Watts Humphrey. In 2005, I had the opportunity to host Watts Humphrey in India during his trip there, learning much from his perspective on PSP and how to implement it successfully in large organizations like Microsoft. Several opportunities came up to review our TSP implementation approach with him, and I was able to fine tune it to be more effective. Today, TSP is implemented in a majority of the projects in Microsoft India; it would not have been possible without continued support and guidance from him. Thank you, Mr. Humphrey!

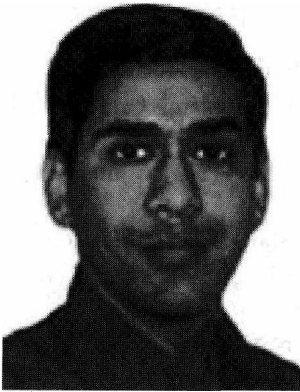
While writing this book, I have referred to SEI's TSP Launch Material and the SEI's (James Over) TSP tool.

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About the Author



Mukesh Jain is a principal quality manager at Microsoft, driving quality of service strategy and continuous improvement in online services. This represents over 200,000 servers for over 700 million users worldwide. He has been with Microsoft for more than nine years, implementing Six Sigma, TSPSM/PSPSM, Mistake Proofing (Poka-Yoke), and driving a quality-focused culture. He is a recipient of Microsoft's most prestigious individual excellence award, the "Gold Star," for four consecutive years. He recently received an honorarium mention from Microsoft's Chief Strategy Officer, Craig Mundie, for his contribution to building the Quality of Service Program and achieving outstanding results. He is a recipient of the Asia Pacific Leadership award (runner-up), Role-Model, Great People—Leadership award (IGNITE Category), Innovation Award, Solution Excellence, and several quality of service focus awards.

He has authored two "Thinkweek" papers for Bill Gates on performance monitoring and quality management. In 2001, Jain initiated and led Microsoft's first-of-its-kind Six Sigma project to improve the user's experience with Outlook performance. Since then he has mentored 14 Six Green Belt Sigma projects, 4 Black Belt projects, and 27 software projects on TSP, achieving a cumulative savings of \$3.1 million.

For the past 13 years, Mukesh has worked at key positions as a developer, business analyst, program manager, solutions architect, coach, process and quality manager, and head of quality. He is an experienced coach and has directed and coached programmers and engineering teams to deliver projects on time, with high quality, and within budget. Prior to Microsoft, Mukesh was associated with several multinational corporations, among them Datamatics, Syntel, and Atos Origin, leading project, quality, and program management. His core expertise focuses on managing quality, leading organizations with process maturity, driving predictability (TSP/PSP, CMM, ISO 9000), measurement/metrics programs, guiding

continuous improvements (Six Sigma), and shipping world-class products in multinational organizations. In the industry, he is recognized as a leader and coach and has made significant differences in the careers of several people.

Along with a bachelor's degree in computer engineering and science, he has achieved various certifications that include Certified Standards Professional, TSP Coach, PSP Developer, PSP Engineer, PSP Instructor, CSTE, CSQA, CQM, CQIA, CQA, CTFL, CPD, CPE, Six Sigma Black Belt, Microsoft Office Specialist, ISO 9000 Auditor, MOF, and ITIL. In 2006, he was honored as "Best Six Sigma Black Belt" by *iSixSigma* magazine.

Mukesh's work in process improvements, defect prevention, Six Sigma, and TSP/PSP has been recognized at various international conferences, including

- "Quality of Service: Measuring and Improving User Experience the Right Way," Microsoft (Engineering Excellence/Trustworthy Computing Conference), United States (June 2008)
- "SCRUM Management: An Offshore Perspective," QAI's Project Management Leadership Conference, India (May 2008)
- "Delivering Successful Projects with TSP and Six Sigma: A Practical Guide to Implementing Team Software," QAI Quest Quality Engineered Software and Testing Conference, United States (April 2008)
- "Improving Web Application Performance Using Six Sigma," BZMedia Software Performance Conference, United States (April 2008)
- "Blending Inspections With Agile and TSP—What's in it?" SEI SEPG 2008, USA (March 2008)
- "Improving Web Application Performance Using Six Sigma," BZMedia Software Performance Conference, Boston (October 2007)
- "Avoiding Software Failures Using TSP/PSP and Six Sigma Methods," SQE/Better Software Conference, United States (2007)
- "Improving Web Application Performance Using Six Sigma," BZMedia Software Performance Conference, United States (April 2007)
- "Planning for Highly Predictable Results with TSP/PSP, Six Sigma, and Poka-Yoke," Microsoft Engineering Excellence (November 2006)
- "Planning for Highly Predictable Results with TSP/PSP, Six Sigma, and Poka-Yoke," PNSQC conference, United States (October 2006)
- "Delivering Successful Projects with Challenges of New Teams," SEI TSP User Group Conference, United States (September 2006)
- "Personal Productivity Improvement with TSP/PSP, Six Sigma, and Poka-Yoke," NASSCOM, India (September 2006)
- "Maturing Your Estimation Process Through Six Sigma and TSP," QAI Software Estimation Colloquium, India (August 2006)
- "Improving Product Usability Through Six Sigma," STeP-In Usability Conference (May 2006)

- “Can Your Software Project Deliver High Quality Results Within Budget, On-Time—Every Time?” STeP-Automation Conference, India (June 2006)
- “Test Process Maturity thru PSP/TSP,” QAI, India (December 2005)
- “TSP in Global Model,” SEI TSP Conference, Pittsburgh (September 2005)
- “TSP/PSP,” Microsoft (Trustworthy Computing Conference) (June 2005)
- “Six Sigma and TSP,” Microsoft (Corporate Business Excellence Conference) (June 2005)
- “TSP—The Road Towards Successful Project Management,” Gyan Lahari, PMI, India (April 2005) (Award: *Best Paper*)
- “Planning for Success with TSP, Six Sigma,” SEI TSP User Group Conference, India (November 2004)
- “Zero Defects Through Poka-Yoke,” Seattle IT E-Commerce Applications Testing Conference, QAI, (2002)
- “Reducing Defects by Eliminating Mistakes at Source,” ASQ, United States (March 2002) (Award: *Quality Laureate*)

Jain has published articles and white papers in several notable magazines including Microsoft, Satyam, ICFAI, and iSixSigma. He has been on the advisory boards for Keynote Systems, PNSQC, IEEE, ISPI, ASQ, SEI, SPIN, and CAI, among others.

Please visit <http://www.MukeshJain.org> for his latest profile, articles, and white papers .

Contents

Preface xiii

Acknowledgments.....xvii

About the Authorxix

1 Introduction1

2 Current Challenges in the Software Industry3

2.1 The Software Crisis.....4

2.2 Software Project Management.....4

2.3 The Iron Triangle—Scope, Schedule, Resources.....6

2.3.1 Scope.....6

2.3.2 Schedule.....7

2.3.3 Resources/Cost7

2.4 Software Quality.....7

2.4.1 Reliability.....8

2.4.2 Usability/Aesthetics9

2.4.3 Grade.....9

2.5 Cost of Quality.....10

2.5.1 Prevention10

2.5.2 Detection.....10

2.5.3 Correction10

2.6 Global Competition and Market Challenge11

2.7 Managing Project Constraints.....11

2.8 Project Failures12

2.9 Geographically Distributed Teams and Attrition.....13

3 Delivering a Successful Project15

3.1 Overview15

3.2 Software Projects.....15

3.3 Project Management.....16

3.4	Project Management Myths	18
3.4.1	Clarifying the Project Management Myths.....	19
3.5	Keys to a Successful Project	21
3.5.1	Goal (SMART Goals)	21
3.5.2	Stakeholders (Communicate and Manage).....	21
3.5.3	Team (Motivated and Involved)	21
3.5.4	Project Planning (First Step in the Project).....	22
3.5.5	Set Expectations (Promise Low and Deliver High)	22
3.5.6	Design (Know Before You Code)	22
3.5.7	High Quality (Doing It Right the First Time—Everytime) ...	23
3.5.8	Iterate and Evolve (Start Small and Build on Top of It)	23
3.5.9	Testing (Test Early and Frequently)	23
3.5.10	Track (Are We on the Right Path to Achieve the Goal?)	24
3.5.11	Manage Change (Don't Let Change Manage You).....	24
3.5.12	Continuous Improvement (Raise the Bar).....	25
3.5.13	Positive Attitude (Keep an Open Mind!).....	25
4	Personal Software ProcessSM (PSPSM).....	27
4.1	Overview of PSP.....	28
4.2	Why PSP	29
4.2.1	Predictability.....	29
4.2.2	Efficiency	30
4.2.3	Quality	30
4.3	The PSP Process.....	30
4.3.1	PSP0: The Baseline Process	32
4.3.2	PSP1: Personal Planning Process	32
4.3.3	PSP2: Personal Quality Management Process.....	33
4.3.4	PSP3: Cyclic Personal Process	34
4.3.5	TSP SM : The Team Software Process	35
4.4	Key Measurements in PSP.....	36
4.4.1	Size	36
4.4.2	Time	37
4.4.3	Defects.....	40
4.5	Software Project Planning and Tracking Using PSP.....	40
5	PSPSM Training.....	43
5.1	TSP Executive Strategy Seminar (1 day).....	43
5.2	Introduction to Personal Process (2 days)	43
5.3	PSP for Engineers (10 days)	44
5.4	Leading a Development Team (Managing TSP Teams; 3 days)	44
5.5	PSP Instructor Training (5 days)	44
5.6	TSP Coach Training (5 days)	45

6	Team Software ProcessSM (TSPSM)	47
6.1	Overview of the TSP	48
6.2	Understanding Team Dynamics	48
6.3	Building Self-Directed Teams	48
6.3.1	Team-Building Strategies	48
6.3.2	Building a Jelled Team	49
7	TSPSM Launch Process	51
7.1	Using the TSP Workbook	51
7.2	Project Meetings	54
7.3	Roles and Responsibilities of TSP Meetings	54
8	Meeting 1	
	<i>Establish Product and Business Goals</i>	55
	Meeting Agenda (Discussion Leader)	55
8.1	Overview	55
8.2	Logistics	56
8.3	Meeting Discussions—Approach and Positive Attitude	58
8.3.1	Discuss with a Positive Attitude	59
8.3.2	Potential Meeting Discussion Questions	59
8.4	Introduction of Team Members	60
8.5	TSP and Presentation of Launch Process Overview	60
8.5.1	Purpose of TSP Launch	60
8.5.2	TSP Launch Meetings 1–9: An Overview	61
8.5.3	TSP Launch Artifacts	63
8.6	Marketing Presentation—Product Objectives and Goals	63
8.7	Management Presentation—the Business Need and Goals for the Product	64
8.8	Goal Priorities	65
8.9	Potential Issues and How to Handle Them	66
8.9.1	Management Availability for Opening and Closing a TSP Meeting	66
8.9.2	Team Availability Throughout the Launch	67
8.9.3	Team Member and Management Training	67
8.10	Meeting Wrap-Up	68
9	Meeting 2	
	<i>Define Team Goals and Select Team Roles</i>	69
	Meeting Agenda (Discussion Leader)	69
9.1	Overview	70
9.2	Reviewing Management and Marketing Stated Goals	70
9.3	Establish Team Goals	71

9.4	Importance of TSP Roles and Responsibilities.....	74
9.5	TSP Roles and Responsibilities.....	74
9.5.1	TSP Role: Team Leader.....	76
9.5.2	TSP Role: Customer Interface Manager	79
9.5.3	TSP Role: Design Manager	81
9.5.4	TSP Role: Implementation Manager	83
9.5.5	TSP Role: Planning Manager	85
9.5.6	TSP Role: Process Manager.....	87
9.5.7	TSP Role: Quality Manager	89
9.5.8	TSP Role: Support Manager.....	91
9.5.9	TSP Role: Test Manager.....	92
9.5.10	TSP Role: Team Member	95
9.5.11	TSP Role: Inspection Manager.....	97
9.6	Role Manager Commitments	100
9.7	Selecting TSP Roles.....	101
9.7.1	Role Category.....	101
9.7.2	Guidelines for Selecting TSP Roles.....	102
9.7.3	Role Selection Process.....	103
9.8	Entering Role Details on TSP Sheet	105
9.9	Goal Tracking	106
9.10	Meeting Wrap-Up	107

10 Meeting 3

<i>Produce Development Strategy</i>	109
Meeting Agenda (Discussion Leader)	109
10.1 Overview.....	110
10.2 Produce Conceptual Design	110
10.3 Team's Development Strategy.....	111
10.4 List of Products to Produce.....	112
10.4.1 The SUMS Worksheet	113
10.5 Development Process Definition	117
10.6 Process Plan.....	119
10.7 Support Plan.....	120
10.8 Change Control Board	121
10.9 Define Role Tasks and Weekly Status.....	121
10.10 Meeting Wrap-Up	122

11 Meeting 4

<i>Building Overall Team Plan</i>	123
Meeting Agenda (Discussion Leader)	123
11.1 Overview.....	124
11.1.1 Available Hours in a Week and Task Hours.....	124
11.2 Work Breakdown Structure (WBS).....	125

11.3	Size Estimation for All Parts of the Final Product	125
11.3.1	Team Estimation	125
11.3.2	Updating SUMS in TSP Workbook	128
11.4	Determine Overall Project Resources Requirements	134
11.5	Create List of Tasks	135
11.5.1	Development Phase Percentage Time Allocation	136
11.5.2	Generate Task List	137
11.5.3	Update Task List with Phase Information	142
11.5.4	Review the Updated Task List	146
11.6	Weekly Availability of Team Members	146
11.7	Generate Overall Team Plan and Review with the Team	151
11.8	Meeting Wrap-Up	155
12	Meeting 5	
	<i>Develop the Quality Plan</i>	157
	Meeting Agenda (Discussion Leader)	157
12.1	Overview	157
12.2	Review Quality Goals	158
12.3	Estimate Defects Injected	159
12.4	Estimate Phase Yield (Defect Removal Rate)	162
12.5	Create and Review the Quality Plan	167
12.6	Meeting Wrap-Up	173
13	Meeting 6	
	<i>Build Individual Plans and Consolidate</i>	175
	Meeting Agenda (Discussion Leader)	175
13.1	Overview	175
13.2	Allocate Tasks to Team Members	176
13.3	Create Individual Plans	178
13.4	Load Balance Individual Plans	179
13.5	Incorporate Internal Project Dependencies in the Plan	181
13.6	Consolidate and Create Team Project Plan	182
13.7	Meeting Wrap-Up	184
14	Meeting 7	
	<i>Conducting Risk Assessment</i>	185
	Meeting Agenda (Discussion Leader)	185
14.1	Overview	186
14.2	Risk Identification and Assessment	186
14.2.1	Risk Impact	189
14.2.2	Risk Probability	189
14.2.3	Risk Priority Assessment	189

14.3	Create Risk Mitigation and Management Plan.....	190
14.3.1	Risk Mitigation	190
14.3.2	Risk Management	190
14.4	Meeting Wrap-Up	193
15	Meeting 8	
	<i>Prepare TSPSM Project Launch Report for Management Briefing.....</i>	195
	Meeting Agenda (Discussion Leader)	195
15.1	Overview.....	196
15.2	Plan the Management Briefing Presentation	197
15.3	Create Presentation.....	198
15.4	Review Presentation and Prepare for Management Briefing	199
15.5	Meeting Wrap-Up	200
16	Meeting 9	
	<i>Hold the Management Review.....</i>	201
	Meeting Agenda (Discussion Leader)	201
16.1	Overview.....	202
16.2	Management Briefing of TSP Project Plan	202
16.3	Plan Review, Discussion, Questions, and Changes	202
16.4	Management's Project Plan Approval	204
16.5	Meeting Wrap-Up	204
17	Postmortem and TSPSM Process Review.....	205
18	Managing TSPSM Teams.....	207
18.1	Entering Project Data in TSP	207
18.1.1	Time on Task	208
18.1.2	Defects Data Entry	210
18.1.3	Task Completion	214
18.1.4	Size Information	215
18.2	Project Data Consolidation	218
18.3	Weekly Project Status Meetings.....	218
18.4	Project Management with Data.....	221
18.4.1	Earned Value.....	221
18.4.2	Planned versus Actual Hours per Week	222
18.4.3	Defects Metrics.....	224
18.4.4	Inspection and Review Rates.....	227
18.4.5	Phase and Process Yield.....	228
18.4.6	Percentage Time in Phase	228
18.4.7	Project Quality Profile.....	230
18.5	Project Reporting	231
18.6	Our Experience	232

19 Coaching TSPSM Teams.....235

19.1 The Importance of Coaching.....235

19.2 Individual and Team Coaching and Guiding in
Right Direction235

19.3 Improving Individual and Team Performance238

19.4 Coaching the Team to Understand Their Own Data.....239

19.5 Summary.....239

20 Overview of Six Sigma.....241

Six Sigma Approach241

Typical Six Sigma Roles.....242

20.1 The Need for Continuous Improvement242

20.2 Solving the Right Problem the Right Way.....243

20.2.1 Defects Are Inevitable.....243

20.2.2 Fixing the Root Cause.....243

20.3 The DMAIC Methodology.....243

20.4 Using Six Sigma in Software244

20.5 Project Case Study: Improve Product Specification Quality,
Completeness and Effectiveness.....247

20.6 Mentoring a Six Sigma Project.....248

Index.....249