

PS&J SOFTWARE SIX SIGMA

Measured Managed and Controlled Project Performance

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Personal Software Process & Team Software Process

The Personal Software Process (PSP) is an SEI technology that brings discipline to the practices of individual software engineers, dramatically improving product quality, increasing cost and schedule predictability, and reducing development cycle time for software.

The Team Software Process (TSP) is a complementary SEI technology that enables teams to develop software-intensive products more effectively. TSP shows a team of engineers how to produce quality products for planned costs and on aggressive schedules.

Watts Humphrey developed PSP and TSP at the SEI in the mid-1990's. (Watts Humphrey is widely recognized as being the originator of the CMMI concept.) The PSP project was aimed at demonstrating that a CMM level 5 process could be used by an individual to develop high quality software without excessive process overhead. PSP proved quite successful and TSP was developed to provide a framework for applying PSP in a team setting to develop high quality software. The two processes are licensed SEI technologies. They are almost always used together in a project setting.

PSP is a lightweight CMMI level 5 process designed for cost effective individual use. It applies to most structured software development tasks including requirements definition, architecture design, module development, and documentation production. It is capable of efficiently producing very high quality software products. There is no cost overhead involved in achieving these high software quality levels. In fact PSP projects are generally faster and cheaper than more conventional approaches to software development.

TSP adds a project management layer to the PSP. It helps engineers to produce quality products for planned costs and on aggressive schedules. It addresses the CMMI level 2 & 3 management processes using high performance inter-disciplinary work teams. Engineers manage their own work and take ownership of their plans and processes. TSP helps the engineers to build a gelled, self-directed team and to perform as effective team members. It shows management how to guide and support these teams and how to maintain an environment that fosters high team performance.

TSP uses team based planning sessions called launches to put detailed project plans in place. Team based planning has a number of advantages. Five people working for 4 days will generate a far higher fidelity plan than one person working alone for 20 days. They will identify more tasks and more dependencies than a single person, and will be less likely to have a consistent estimating bias. Errors from multiple uncorrelated estimates tend to cancel out. The team will develop a plan faster than a single person. They will own it. They will use it.

The TSP planning horizon is intentionally short. The initial launch puts a top-level plan in place for the entire project and a detailed plan covering the next three months. Re-launches are performed every three months to create the detailed plan for the next quarter or whenever circumstances change so much that the existing plan is no longer applicable. The short planning horizon avoids the problem of creating needlessly detailed plans for things that are likely to change anyway while encouraging the production of a high-fidelity detailed plan covering the next cycle. The high level of detail makes it much

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easier to get accurate estimates and facilitates accurate progress tracking. Adjustments to the plan can occur at any time. The launches are not training; they are part of the project.

A weekly status meeting provides the mechanism for tracking and reporting progress. Each team member tracks and presents his or her own status for the week. The process is designed so that peer pressure becomes a powerful force motivating performance.

PSP augmented by TSP can support the development of large-scale software systems. It can be used to accelerate an organization from CMMI level 2 to level 5. It provides an excellent foundation for application of six sigma statistical tools. It does not require a high level of process maturity for introduction. CMMI Level 1 organizations have used it very successfully.

TSP has been used with pure software teams and with mixed teams of hardware, software, systems, and test professionals. It has been shown to sharply reduce total development cost. In our experience, it has been common for new TSP teams to increase productivity from 30%-50% within one year. Product quality, measured in terms of defect escapes, typically improves 4x in the first year and gradually moves to 10x improvement.

PSP and TSP are applicable to new development and maintenance. Team size ranges from 5 - 15 professionals for simple teams. Larger multi-teams can range up to several dozen professionals.

Choosing PS&J

PS&J Software Six Sigma is an SEI Partner for Personal Software Process (PSP) and Team Software Process (TSP). Our experience with PSP and TSP dates back to 1998 when we were involved in piloting the early versions of TSP. All of our TSP team members are SEI-authorized instructors and TSP coaches.

Our team has coached PSP projects in a broad range of industries including aerospace, medical instrumentation, industrial automation and control, financial services, and consumer electronics. We have worked with:

- projects ranging in size from 5 KLOC to 500KLOC;
- team sizes ranging from 5 to 75 full time members;
- organizations ranging from CMM level 1 to CMM level 4;
- embedded systems, distributed client server systems, and web based systems.

PS&J has coached teams using various programming languages, including assembly, C, VB, C++ and Java.

PS&J coaches have actually managed real projects using PSP and TSP. This experience gives us a unique perspective on making TSP work in an industrial setting.

PS&J is experienced with change management and the issues involved in industrial scale deployment. Our team has helped organizations train their entire staffs and transition all their projects to TSP. We have encountered all the typical deployment pitfalls and have learned to deal with them, continuously incorporating new lessons learned into our own evolving deployment process.

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All of PS&J's instructors have extensive training experience. They have trained well over 500 engineers in PSP and launched dozens of TSP teams in North America, Europe, and Asia.

Our PSP for Engineer's Course includes two additional days for a total of 12 class days. This allows us time for extensive one-on-one interaction with our students allowing us to work them past the rough patches of the standard 10-day course and resulting in an exceptionally high completion rate. Our completion rate for PSP for Engineers is over 90%. This contrasts sharply with typical completion rates that are frequently closer to 60%.

PS&J has extensive experience with TSP launches. Two of our team members were the first SEI Partner launch coaches to be authorized by the SEI. PS&J team members have worked with:

- team sizes ranging from 5 to 65
- applications ranging from 5,000 to 750,000 LOCs
- maintenance programs and new development programs
- geographically distributed teams operating from multiple locations around the world
- clients in America, Europe and Asia

Our clients have applied TSP to multiple applications domains including aerospace, consumer electronics, and financial services.

PS&J has worked with the standard TSP as well as with the major TSP variants, including TSP for functional teams and multi-team TSP. Contact us if you have special needs: a large team, distributed locations, or a functional organization.