

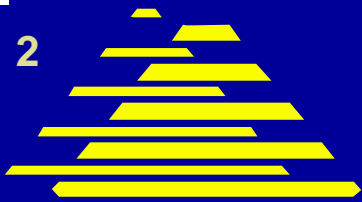
# **PSP<sup>SM</sup>/TSP<sup>SM</sup>** **surfing the next wave**

**VIP presentation for Alcyonix**

**Daniel M. Roy**

**September 2004**

PSP, TSP, Personal Software Process and Team Software Process  
are service marks of Carnegie Mellon University  
CMM is registered in the U.S. trademark and patent office



# Agenda

**Background**

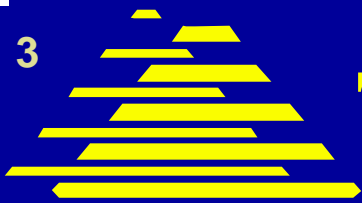
**PSP course description**

**PSP results**

**TSP offering**

**TSP results**

**PSP/TSP/CMM synergy**



# The Personal Software Process

Programming language class practices do not scale up

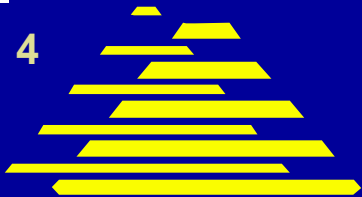
Corporate wide efforts encounter multiple levels of resistance on the way down

The PSP:

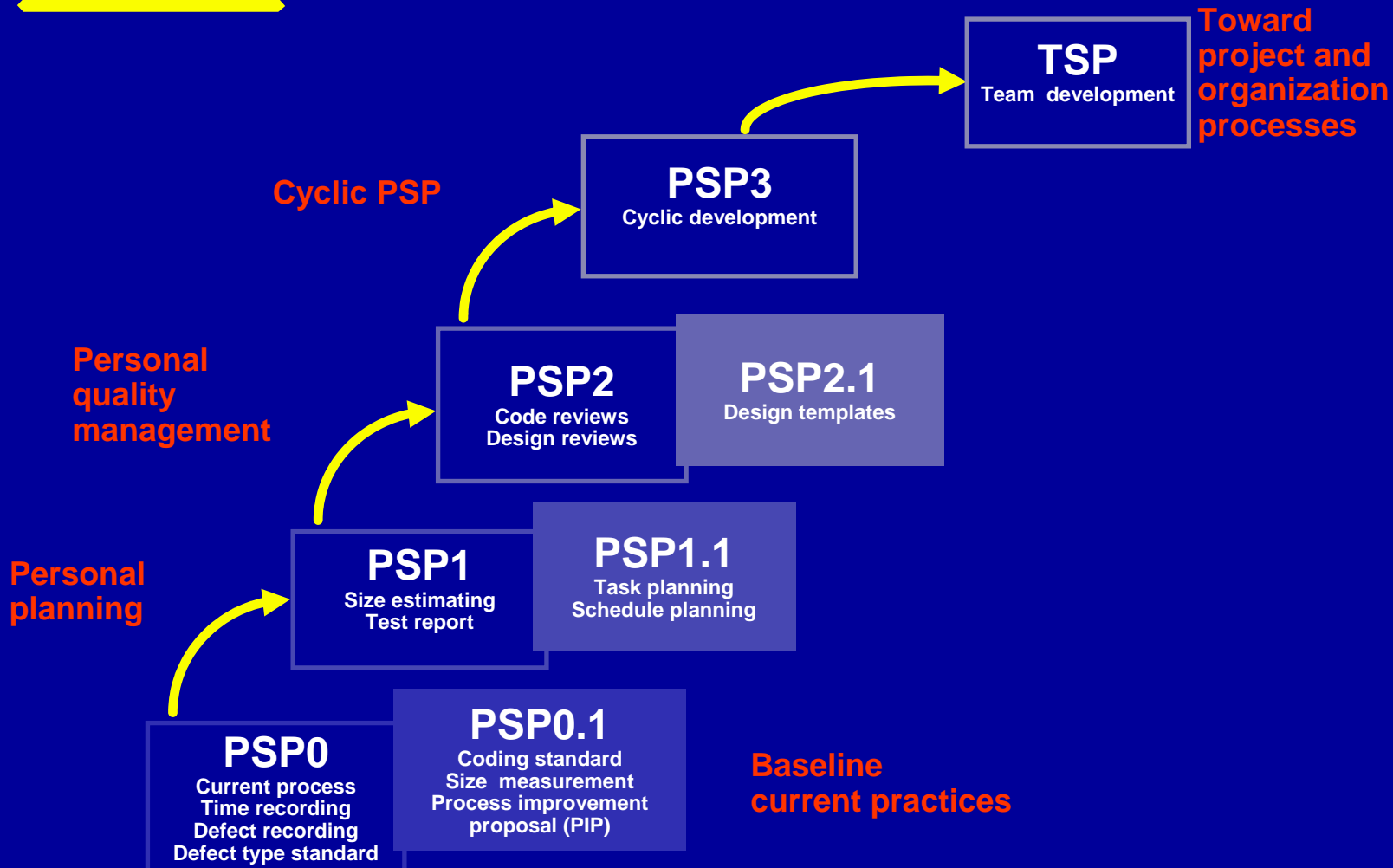
*“...scales down industrial software practices to fit the needs of small scale program development. It then walks you through a progressive sequence of software processes that provide a sound foundation for large-scale software development”*

**Watts Humphrey**

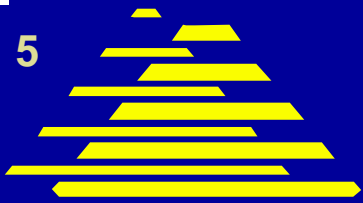
Watts S. Humphrey, 'A Discipline for Software Engineering', Addison Wesley, 1995



# The PSP Process Levels



5



# PSP Course Objectives

**Demonstrate a level 5 approach to developing software**

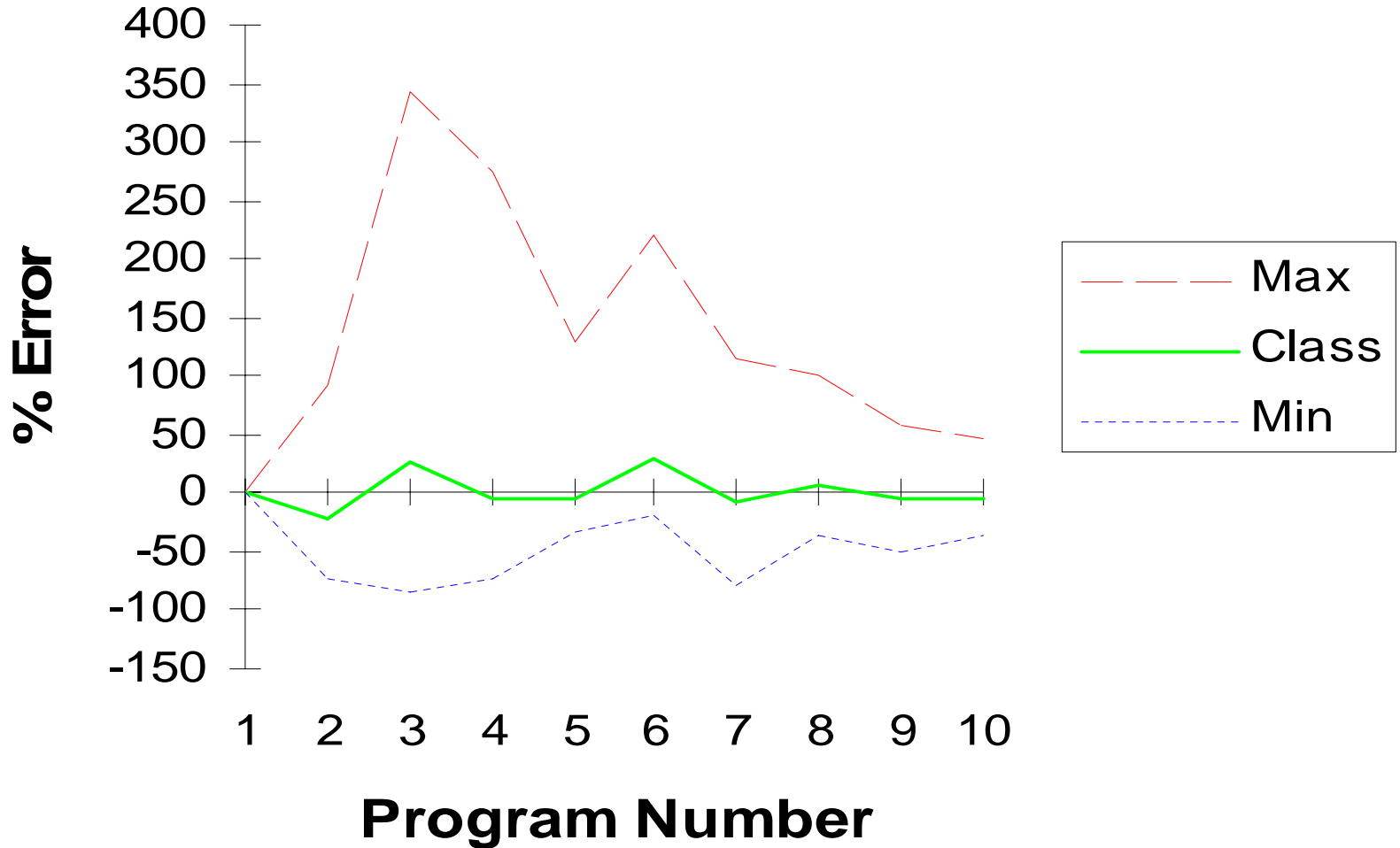
**Show how to measure and analyze personal software process data**

**Show how to use process data to improve personal and team performance**

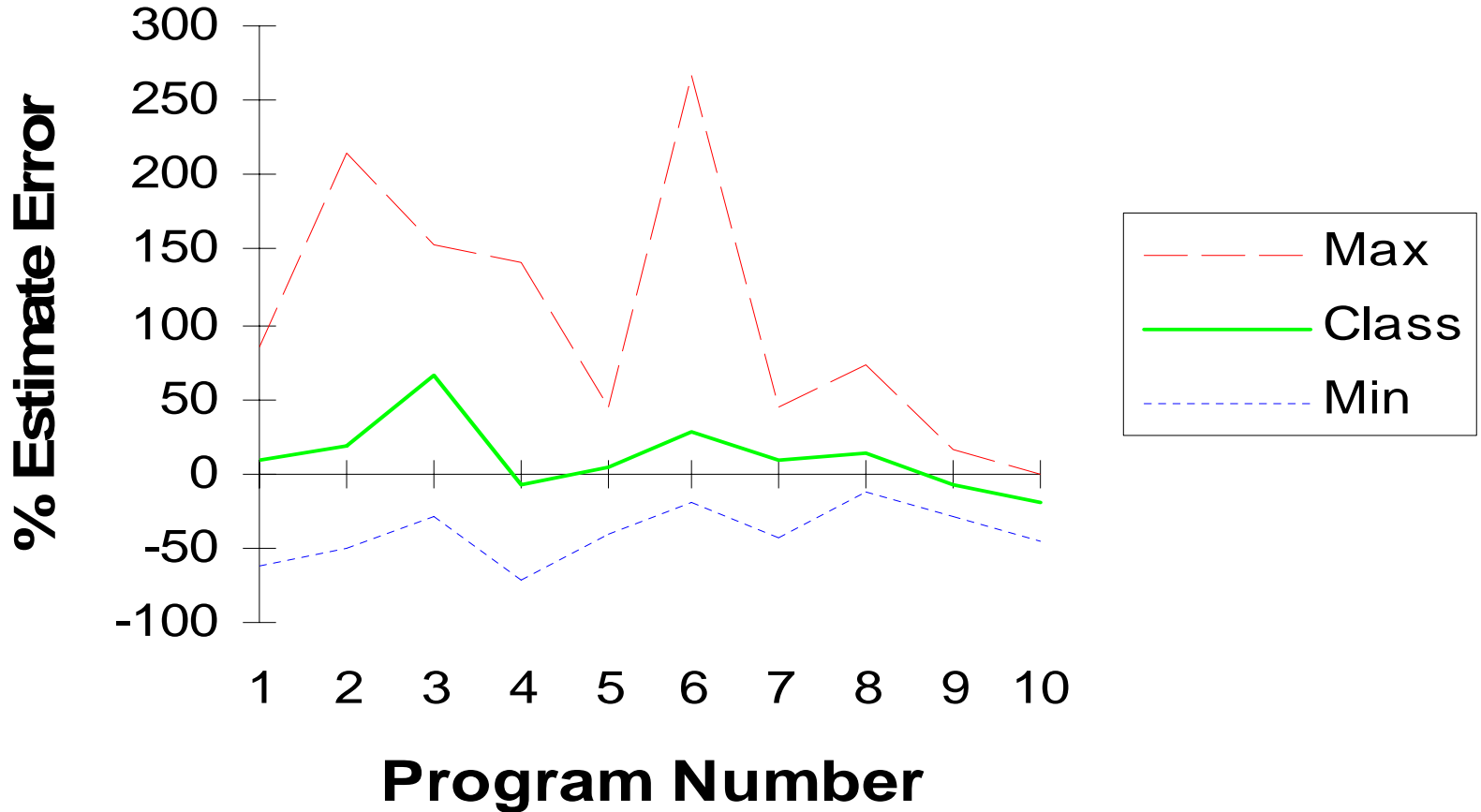
**Show how to apply these methods to many other tasks**

From SEI course  
“PSP for engineers”

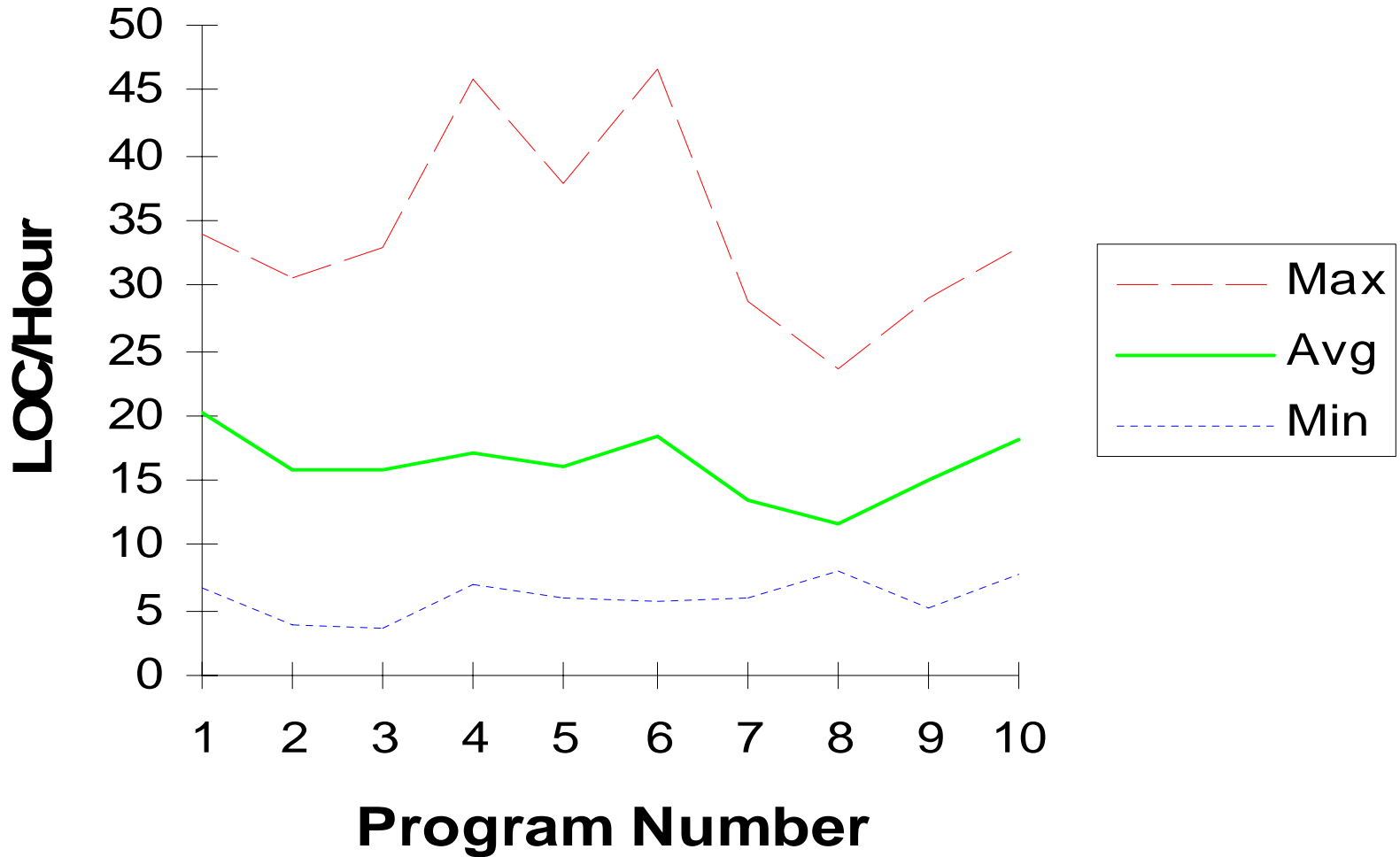
# Size Estimating Error Range



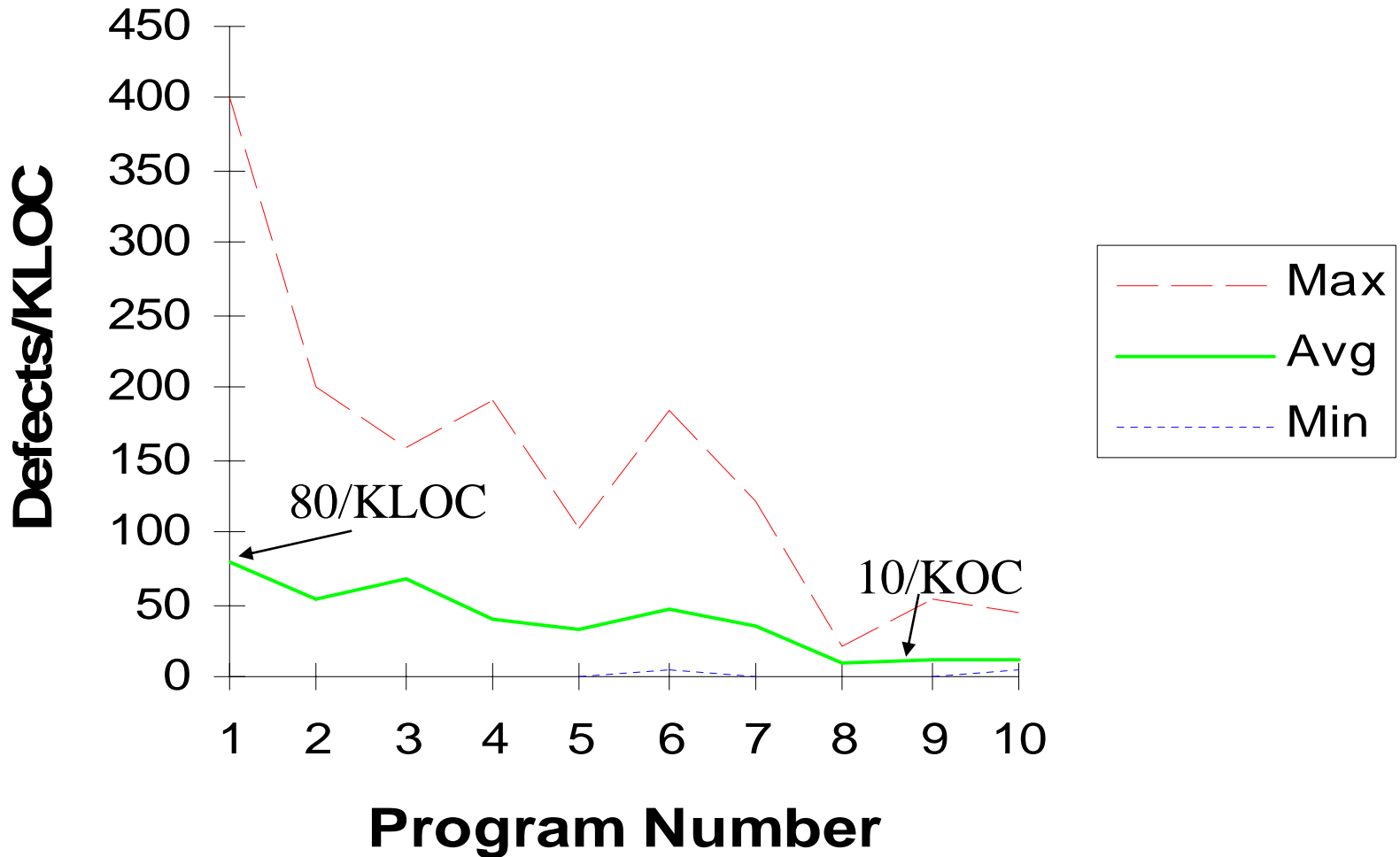
# Time Estimating Accuracy - % Error

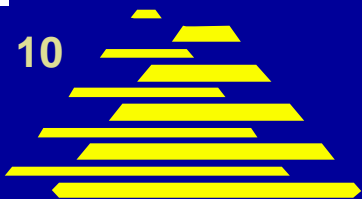


# Productivity Range



# Defects Found in Test - Range





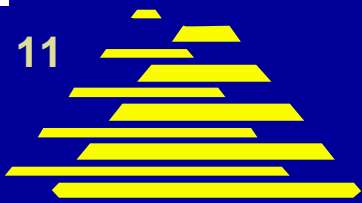
# PSP Return On Investment

The following table shows projected integration and system test (I&S) rework costs per KLOC for engineers before and after PSP training assuming cost of 10 hours per defect in I&S test

	Before PSP	After PSP
Defects/KLOC into Unit Test	80	10
Yield for Unit Test	50%	50%
Defects/KLOC into I&S Test	40	5
I&S Defect fix time/KLOC	400	50

**Integration and system test rework savings are 350 hours per KLOC**

From "Introduction to PSP" tutorial



# The Team Software Process

**Team Software Process (TSP) is a process for PSP-trained software engineering teams with 2 to 15 members**

**TSP is a Level 5 process for teams**

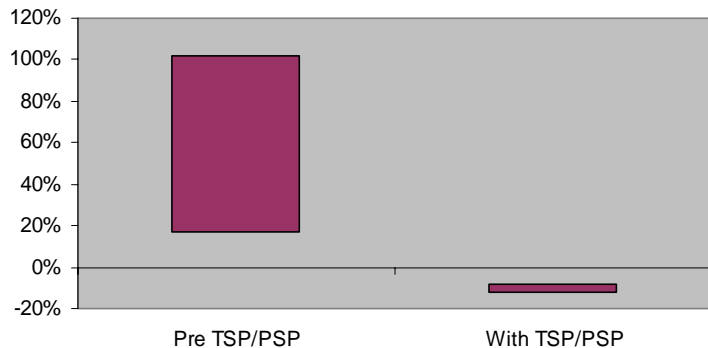
**PSP training is a pre-requisite for TSP**

**TSP support consists in**

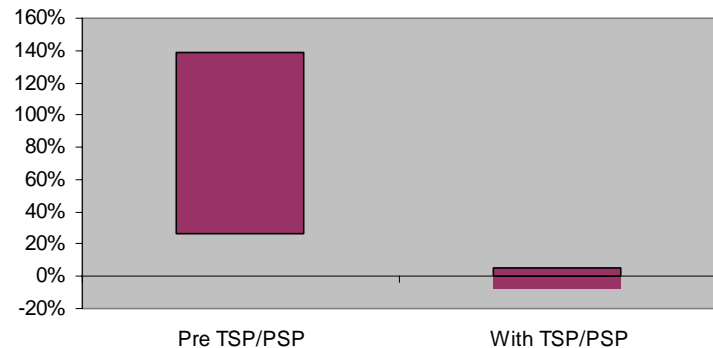
- **Helping transition PSP in the organization**
- **Launch of a project using PSP techniques**
- **Follow up consulting on the project**
- **Re-launch of project at major milestones**
- **Analysis of results and recommendations**

# TSP Results

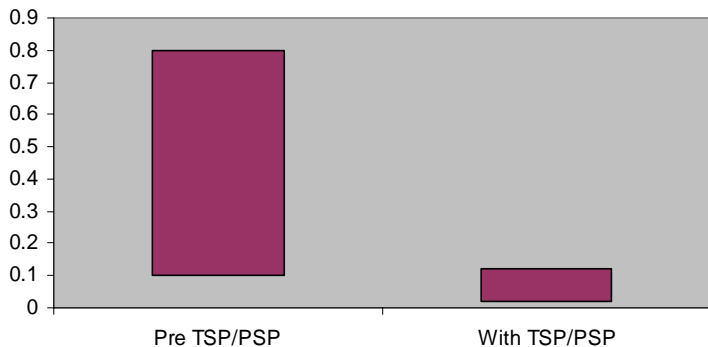
### Average Effort Deviation - Range



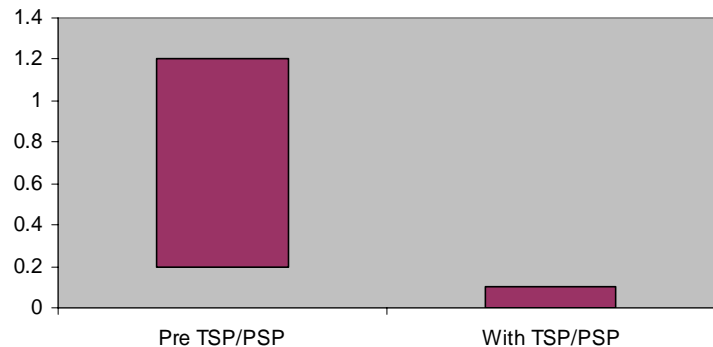
### Average Schedule Deviation - Range



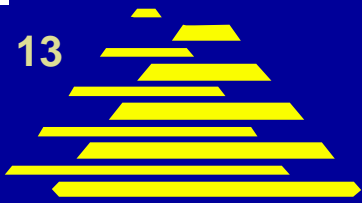
### Defects/KLOC in Acceptance Test - Range



### Post-Release Defects/KLOC - Range



From SEI TSP  
executive seminar

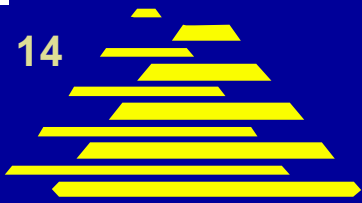


## What they say

*“The PSP course is not about the lectures. The course is not about the programming the students do—how fast/well they do it. The course is about the students seeing for themselves how they really work, and realizing that they can make improvements.”*

*“The best part about TSP is that collecting the metrics is for my benefit, not for someone else. I found that collecting the data proved to me that using a better process really does help my quality and productivity.”*

Mulaney & Davis Sep 03

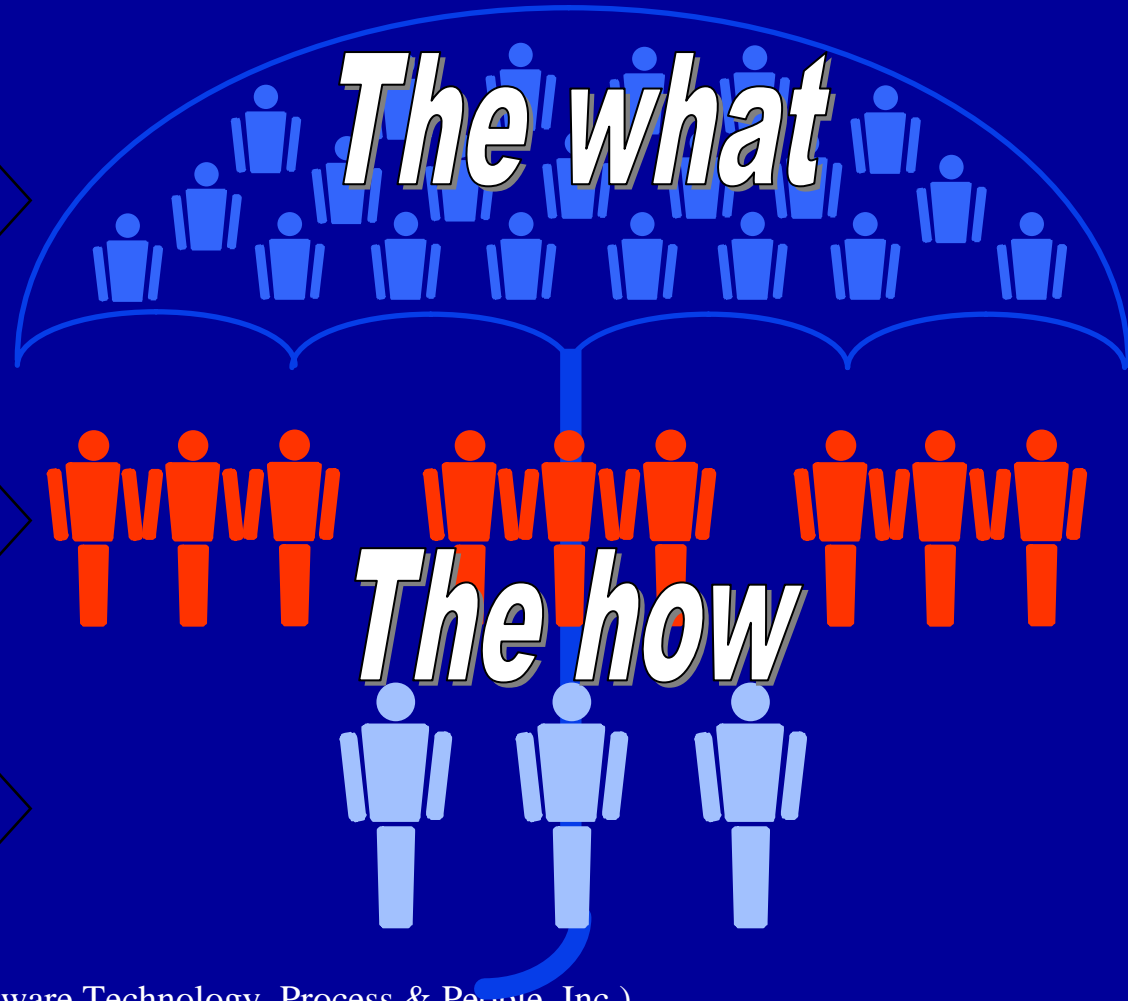


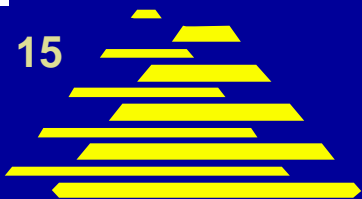
# PSP, TSP, and the CMM

**CMM - Builds organizational capability**

**TSP - Builds quality products on cost and schedule**

**PSP - Builds individual skill and discipline**





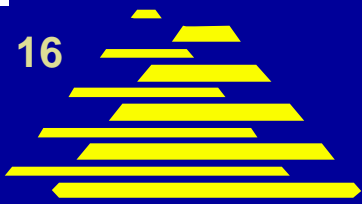
## **In summary**

**PSP has immediate, well documented benefits**

- **plans three times more accurate**
- **test defects reduced by an order of magnitude**
- **keen awareness and understanding of process**

**TSP accelerates progress on the CMM scale**

- **alleviating resistance at lower levels**
- **demonstrating L4 (SPC) and L5 behavior**
- **CMM is the “what”, TSP is the “how”**



# To probe further

<http://www.sei.cmu.edu/tsp>

**Watts S. Humphrey, *Winning With Software*, Addison-Wesley, 2004**

**Noopur Davis, Jim McHale *Relating the Team Software ProcessSM (TSP) to the Capability Maturity Model for Software (SW-CMM)*, June 2002**

**Noopur Davis, Julia Mullaney *The Team Software ProcessSM (TSP) in Practice: A Summary of Recent Results*, Sept. 2003**