Programming

Our job is to transform poorly understood and rapidly changing needs into precise machine instructions.

We are expected to
• make responsible commitments
• deliver on planned schedules
• produce quality products

If we can’t do this, our
• customers will be unhappy
• management will be dissatisfied
• businesses will suffer
Track and Report

Businesses run on schedules and commitments.

Our customers and managers must know the status of our work.

To accurately report on status, we must measure status.

To measure status, we must have measurable plans.
Plan Every Project

Never make or change a commitment without a plan.

The people who do the work make the plan.

If you can’t plan accurately, plan often.

Plan what you know and plan at a level that fits the job.

If the plan doesn’t fit the work, revise the plan.

Base plans on historical data.

To obtain historical data, you must have measurable processes.
Use a Measured Process

To measure your work, you must define the measures.

To define the measures, you must know the job steps.

Tailor the process to fit the work.

For different kinds of work, use different processes.

When the process doesn’t fit the job, change the process.

Use the process to measure, plan, and track the work.
Design Before You Build

Start with the best requirements you can get.

Recognize that the requirements will change throughout the job.

Take small steps.

Design what you know.

Explore what you don’t know.

When you know enough, design and build it.
Quality is the Top Priority

If it didn’t have to work, you could build it pretty quickly.

It is always fastest to do the job right the first time.

Rework and repair is wasteful.

The sooner you fix it the better.

Focus on quality from the beginning of the job.

Quality without numbers is just talk.
The Best Projects

The best projects are an artful balance of conflicting forces.

They must consider
  • business needs
  • technical capability
  • customer desires

If any facet is slighted, product quality will suffer.

To build superior products, teams must understand the complete context for their projects.
The Best Teams

The best teams
  • define their own processes
  • produce their own plans
  • make their own commitments
  • direct their own projects
  • regularly track and report on their work
  • consistently use their selected methods
  • develop the best products

The Team Software Process (TSPSM)
  • builds self-directed teams
  • guides these teams in producing superior products

SMTeam Software Process and TSP are service marks of Carnegie Mellon University.
Using the TSP

The TSP builds teams.

TSP teams first plan the entire project.

They make more detailed plans for the next few weeks or months.

TSP teams revise and refine their plans as often as needed.
The TSP Launch Process

Day 1
1. Establish product and business goals
2. Assign roles and define team goals
3. Produce development strategy and process

Day 2
4. Build overall and near-term plans
5. Develop the quality plan
6. Build individual and consolidated plans

Day 3
7. Conduct risk assessment
8. Prepare management briefing and launch report

Day 4
9. Hold management review
Launch postmortem

A qualified TSP coach guides the team through a defined process to develop its plan and to negotiate that plan with management.
The TSP Launch Products

Business needs
Management goals
Product requirements

What?
- Team goals
- Conceptual design
- Planned products
- Size estimates

How?
- Team strategy
- Team defined process

When?
- Task plan
- Schedule plan
- Earned-value plan

Who?
- Team roles
- Task plans
- Earned-value plan

How well?
- Quality plan

What if?
- Risk evaluation
- Alternate plans
TSP Results from 18 Projects

Average Effort Deviation - Range

-20% 0% 20% 40% 60% 80% 100% 120%
Pre TSP/PSP With TSP/PSP

Average Schedule Deviation - Range

-20% 0% 20% 40% 60% 80% 100% 120% 140% 160%
Pre TSP/PSP With TSP/PSP

Defects/KLOC in Acceptance Test - Range

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9
Pre TSP/PSP With TSP/PSP

Post-Release Defects/KLOC - Range

0 0.2 0.4 0.6 0.8 1 1.2 1.4
Pre TSP/PSP With TSP/PSP
Engineers Reactions

Engineers like to work on self-directed teams.
• This really feels like a tight team.
• Tracking your time is an eye opener.
• Really good teamwork on this project - no duplication of effort.
• I’m more productive.
• Gives you incredible insight into project performance.
• Wonderful to have team members assigned specific roles.
• Team really came together to make the plan.
• A more disciplined process allowed me to do a better job, and allowed me to balance my job with other aspects of my life.
• This project was a lot less stressful than other projects.
• I feel included and empowered.
• Today was the birthday of our team.
Business Needs

We all work for organizations.

These organizations require plans.

Unless engineers are independently wealthy, they must work to schedules.

If they don’t make their own schedules, somebody else will.

Then that person will control their work.
Controlling Your Own Destiny

To control the way they work, engineers must plan their projects.

For management and customers to trust these plans, the engineers must make accurate plans.

To make accurate plans, they must have data.

To have data, they must follow a defined and measured process.

With the PSP and TSP, engineering teams define the process that best fits their projects.
For More Information

Visit the PSP or TSP web sites
   http://www.sei.cmu.edu/psp/
   http://www.sei.cmu.edu/tsp/

Contact a PSP transition partner
http://www.sei.cmu.edu/collaborating/partners/trans.part.psp.html

Contact SEI customer relations
   Software Engineering Institute, Carnegie Mellon University
   Pittsburgh, PA  15213-3890
   Phone, voice mail, and on-demand FAX: 412/268-5800
   E-mail: customer-relations@sei.cmu.edu

See the book
   Winning With Software: an Executive Strategy, by Watts Humphrey, Addison-Wesley, 2002