Software Process Improvement

Team Software Process (TSP)
Personal Software Process (PSP)
Software Engineering as Process

• Engineering implies Measurement
• Measurement is a Repeatable Process
• Process is Doing
• Doing implies Observing
• Observing produces ideas for improvement
Measurement & Improvement

• **What is measurable?**
  – Estimated and Actual time to write a section of code
  – Number of errors found prior to shipment
  – Number of defects found post-shipment
  – Total days from start of project to first shipped release
  – Lines of code – function point count --- user story count
  – Total cost spent on developing, advertising and shipping product
  ✓ Many (most?) software engineering activities are measurable

• **What is improvement?**
  – Decreasing product costs by eliminating engineering “waste”
  – Shortening development timelines by writing better code the first time
  – Increasing product quality by reducing shipped defects
  ✓ Improvement means making activities efficient
Economic Value of Good Process

• Poor process costs time and money*
  – More than two-thirds of project costs go to testing and stabilizing the product
  – Jain implemented TSP at Microsoft-India:
    • > 66% projects went to Zero-Defects in 6 months
    • 94% projects were delivered on time

• Good process makes money
  – Reliable software estimation means true costs can be accurately assessed (and thus correct business decisions can be made)
  – Software quality control means confident delivery of “good enough” software (and strong customer sales)

Personal Software Process

• 4 Measurements
  – Size
    • Lines of code, user stories, function points
    • Appropriate to component
    • Consistent
  – Effort
    • Time to complete task (minutes)
    • By task type (coding, unit test, documenting, etc.)
  – Quality
    • Errors (found during unit test)
    • Defects (found after delivery to QA team or customer)
  – Schedule
    • Planned vs Actual
    • Detailed progress tracking throughout project
Team Software Process

• Group-based PSP
  – Quality Control
  – Secure Software
  – Improve Process Management
  – Effective Team Organization

• Establish team goals
• Define team roles
• Assess project risks
• Produce an effective project plan
Worth A Look

• The Cathedral and the Bazaar by Eric Raymond
• Anything by Watts Humphrey
• Jain’s book
• The SEI (Software Engineering Institute @ Carnegie Mellon):
  – Team Software Process -- http://www.sei.cmu.edu/tsp/
• Jason Gorman’s blog
  – http://www.testingreflections.com/node/view/5542
• And, of course, Joel Spolsky, Steve McConnell and
  – http://www.joelonsoftware.com/
  – http://www.codinghorror.com/