Honeywell PSP Deployment Strategy

Software Engineering Institute Symposium

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Agenda

- Honeywell's vision
- Software Six Sigma organization
- PSP/TSP deployment plan
- Getting sites started with PSP
- Contacts

Honeywell Software Development Vision

- The merger between AlliedSignal and Honeywell provided a unique opportunity to combine the strengths of two companies.
- Our CEO set corporate goals for the new Honeywell.
  - delight customers, make the numbers, deploy Six Sigma Plus, deliver learning to all associates
- The SW Integration Team defined a software development vision.
  - comprised of the most productive, creative, innovative, and quality-conscious workforce in the world
  - enabled by data-driven, disciplined development processes, and state-of-the-art tools
  - supported by learning programs that foster personal excellence and continuous improvement

The Software Six Sigma organization was created to move Honeywell towards achieving its vision.

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Software Six Sigma Objectives

- **Improve the quality and reduce cost and cycle time of systems and software development, freeing up resources and enabling growth**
  - **monitor, identify, pilot emerging software process technologies**
  - **deploy proven processes and tools throughout Honeywell**
  - **provide CMM-based process assessment to Honeywell sites**
  - **drive alignment of Six Sigma Plus, PSP/TSP, and CMM**
- **Offer training and consulting services to external customers**
- **Establish Honeywell as *the* leader in high quality systems engineering and software development**

Introduce PSP/TSP as a means of meeting corporate objectives

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PSP/TSP Organizational Business Objectives

- **Pilot program goals**
  - run 6 PSP/TSP pilots over 18-24 months
  - use pilot projects that reflect multiple sites and multiple domains
  - reduce integration and test defects by 30%, and increase weekly hours on task by 20% relative to control project
  - break even on a 12-month project
- **Deployment starts immediately after pilot completion**
- **Institutionalization objectives**
  - institutionalize within 3 years after pilot phase
  - reduce integration and test defects by 50%
  - increase weekly hours on task by 50%
  - permanently reduce software development cost by 25%-40%

Understand the drivers to successful deployment of PSP/TSP

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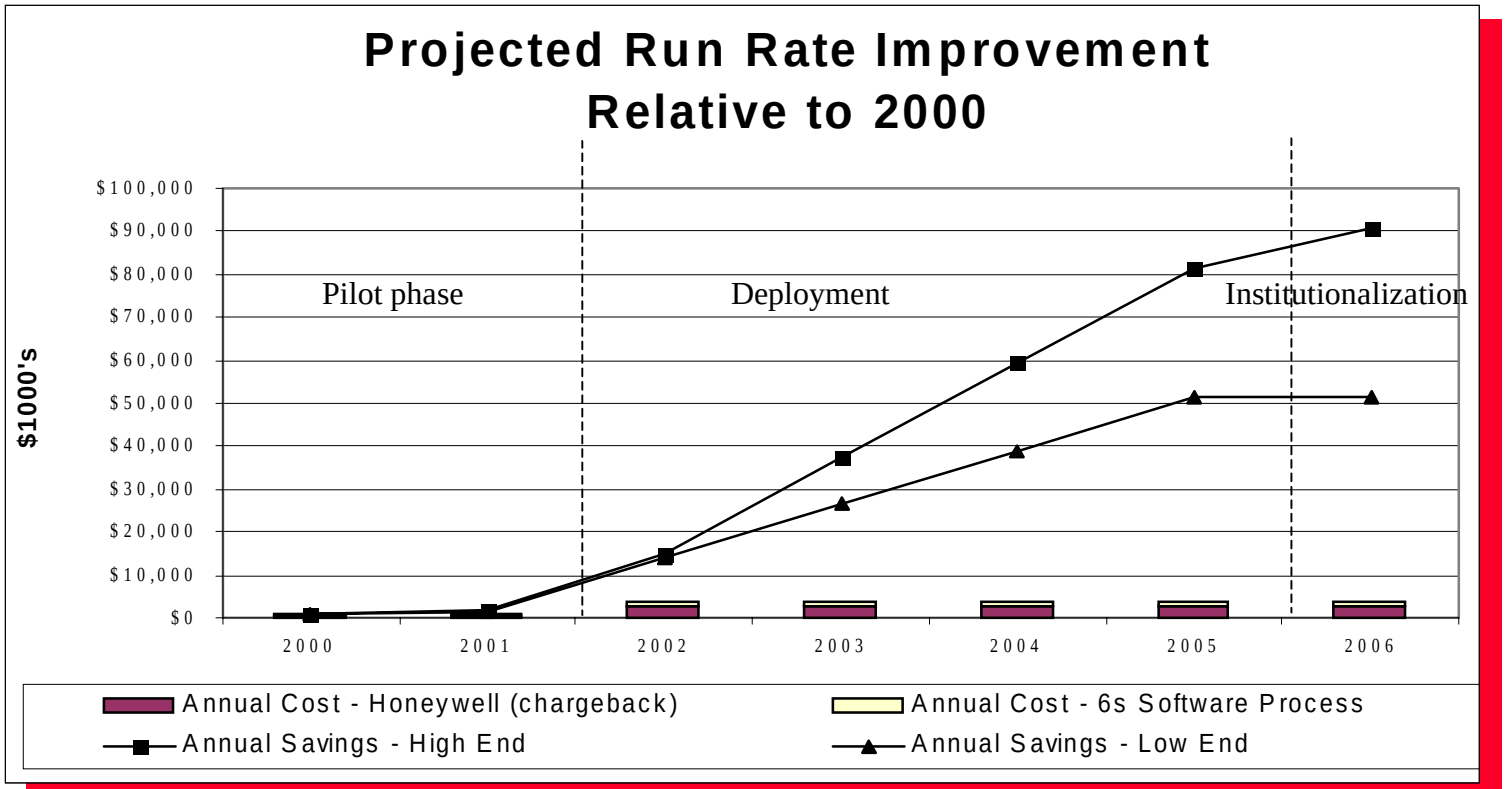
Projected Organizational PSP/TSP Savings



- **25% to 40% cost reduction at full institutionalization**
- **annual cost avoidance of $50 to90M**

...the power of quality on the scale of Honeywell's workforce

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Getting Started with PSP

- Understanding the cost/benefit
- Building sponsorship
- Selecting a pilot project
- Automation
- Training the engineers
- The TSP launch
- Support structure

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PSP/TSP Cost Benefit Summary

	Pilot	Institutionalization
Baseline project cost	$980K	$980K
PSP/TSP deployment cost	$202K	$18K
PSP/TSP savings	$249K	$249K – $442K
Quality – integration & test	$103K	$103K – $172K
Schedule – task hours	$146K	$146K – $290K
Net Cost with PSP/TSP	$933K	$556K – $749K
Savings	$47K	$231K - $424K
Run rate improvement	5%	23% - 43%

Post-institutional savings range goes from a low-end comparable to pilot project to a high-end that assumes a greater level of process maturity and use of Six Sigma methods that might not be possible with a less capable process

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Building Sponsorship

- Provide “Managing PSP-trained Engineers” training to first and second line supervisors and managers
  - Honeywell uses a 2-day version of the course to make it accessible to managers with busy schedules
  - “PSP Executive Seminar” does not provide adequate technical depth for this management group
- Generate cost/benefit analysis
- Establish linkage of PSP/TSP to organizational initiatives
- Provide senior management with “PSP Executive Seminar” training
- Instructors with first-hand PSP/TSP experience provide credibility for managers and executives

Selecting a Pilot Project

- Lower maturity level organizations can implement PSP.
  - need basic CM and QA in place
  - desirable to have a documented process capability baseline
- Pilot project should break even within one year.
- The first line supervisor “sells” PSP to the pilot team.
- A PSP-trained team mentor should be selected from outside the project.
- In selecting the initial projects, try to pick ones that are not in perpetual crisis.
- In selecting the initial team, try to pick members who are open-minded.

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Training the Engineers

- Just-in-time training prior to project start
- One week on, two weeks off, one week on
- Dedicated training facility; preferably offsite
- Each student is provided with a laptop computer
- Automated tool use during training to facilitate data capture and analysis
- Entire team is trained together
- First line supervisor and mentor trained with the team *after* completing the “Managing PSP-trained Engineers” class
- Reward developers for taking the training and for completing the homework assignments

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Automation

- Robust automation essential for metrics collection and analysis when using PSP/TSP
- Provided by multi-user client server data base application
- Includes support for
  - scheduling and keeping records of meetings and inspections
  - logging and tracking the status of action items
  - risk management
  - problem reports
  - TSP launch planning and tracking
  - PSP time and defect logging
  - estimation (PROBE)
  - automated metrics collection and analysis

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The TSP Launch

- Developers have completed homework and demonstrate quality improvement
- Sponsorship meeting
  - authorizing sponsors through first line supervisors
  - other affected managers
- External facilitation
- Initial four-day launch
- Quarterly three-day relaunch
- Monthly checkpoints (or more frequently)
- Automated tool use during launch

Support Structure

- **Senior management support**
  - visibly ask for PSP metrics
- **Team mentor**
  - mentor should be trained with the pilot team and should complete the homework assignments
  - mentor should not be on the program critical path
- **Rewards and recognition**
  - reward pilot team for taking the class and for completing the homework assignments

Deployment

- Existing projects are allowed to run to completion with existing processes
- Assuming that 1/3 of the staff of a typical site will be involved in a new start each year, a site will typically reach full institutionalization within three years after the completion of the pilot phase
- Site evaluates new projects for suitability for PSP/TSP as they start
- Just-in-time training prior to project start
- External launch facilitation; local support and mentoring
- Once the process is institutionalized, the site becomes self-sustaining

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Recommendations

- Generate sponsorship from the middle out
- Understand the cost/benefits of PSP/TSP
  - make your best estimate based on the data you have, and move on !!!
  - present the benefit as quality improvement, not productivity improvement
- Integrate with organizational initiatives
- Train the supervisor and mentor with the team, just-in-time
- Implement PSP and TSP at the same time

… Utilize PSP / TSP to achieve measurable business results

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