ATTITUDE

WHATEVER THE MIND OF MAN CAN CONCEIVE AND BELIEVE IT CAN ACHIEVE.

NAPOLEON HILL
First TSP Results at Ecuador and Colombia, a shared successful effort

- TSP Adoption in LA: Roll blocks and Lessons Learned
- Overall improvement experience by a TSP project: Bupartech case
- Metrics and performance of the PSP trained engineers
- Successful partnership into TSP community
Brief History (1)

- Late 90's first awareness about TSP:
  - Attend Watts Humphrey presentation in Santiago Chile
- 2004 first presentation about PSP in Procesix Workshop in Santiago Chile
- 2004 and 2005 Procesix invest effort to introduce TSP
- March 2007 we were introduced to Jim Over and we committed to restart our effort in TSP
- October 2008, the pioneer Colombia TSP started, organized by Procesix
  - Bogotá, Cali and Medellin
  - 50 executives, 40 companies, 10 universities, 4 governmental organisms
  - 100 attendees to the 2008 Procesix Workshop in Medellin, Colombia
Brief History (2)

- November 2008, first TSP Executive Seminar in Colombia
  - 30 attendees
- November 2008, a National program for TSP was presented to SENA
- December 2008, first PSP orientation training for Digital Future
  - 27 attendees, all of them University professors
- April 2009, SENA and Digital Future organized a TSP Kickoff event
  - 250 engineers, managers, project leaders, university reps
  - Agreement signed by SEI, SENA, Digital Future and Procesix
  - TV and press broadcast of the purpose of TSP and its effect in Colombia
  - June 2009, signed agreement between SEI, ParqueSoft and Procesix
Brief History

• 2010, first PSP Fundamentals open course, 17 Attendees
• 2010, Procesix Colombia sign a contract with SENA to start the National PSP Academy.
• 2010, 15 engineers from Ecuador were trained and pilot project coached
• August 2011, a project with the sponsorship of SENA started
  – 50 engineers trained in PSP Fundamentals
  – 24 project managers and executives in TSP
• September 2011, 10 SENA instructors completed PSP Advanced training
• Summary
  – 92 PSP Fundamentals, 25 PSP Advanced, 58 TSP Executive Seminar
  – 130 PSP/TSP orientation training
  – >1500 exposed to any presentation of TSP
Roll Blocks

Have been difficult to introduce TSP to the LA countries

- Cost (Training, Fees, Licensing)
- Not easy to believe TSP results showed (“seems to be too good to be true”)
- No organizational “certification” (nobody ask for it)
- Cultural barriers (discipline, change of mind set)
  - Top Management desire for project control (sometimes they do not believe on self direct teams concept)
  - Task hours versus low productivity
  - TSP versus Agile methods
  - “We have already CMMI. Should we invest in TSP?”
  - “Too much training, no availability to attend”
Lesson Learned

**Keys to succeed**

- Offer orientation and massive presentations by an international recognized individual
- Offer orientation training to managers and leaders
- Support from National Initiatives
  - Prosoft, Mexico or SENA, Colombia
- Complete introduction of TSP
  - Must be the whole path, training and coaching
Lesson Learned

Issues to be aware of

• Ethical behavior?
  – Depreciation of SEI TSP courses (free courses or working under costs)
  – Try to block or knock down other partners initiatives using any kind of means
  – Monopolize versus Strategic Alliances
  – TSP trained resources “piracy”

• Awareness time sometimes take one year or more
  – Government grants reduces awareness introduction up to 60%
Bupartech Case: TSP on MAIA Project

- Business and Product Goals:
  - Develop a BPM Multiplatform Financial Solution
  - Solution must be done using jBPM, an open source technology involving extensive use of Java, Hibernate, Spring, Oracle and PostgreSQL

- Team (EVANs) Characteristics:
  - 6 Members plus team leader
  - 2 senior developers plus 4 junior developers
  - NO experience from juniors on the technology
Bupartech Case: Meeting 1 and 2

• Management Goals:
  • Deliver on 12 weeks (this was on Christmas 2010!)
  • Emphasis on open source solution and SaaS Architecture
  • Critical emphasis on process fidelity and discipline.

• Important Facts:
  • Management was very supportive
  • Team was comprehensive
  • Delivery date seems difficult, but the team was committed to bring on success to the TSP pilot.
  • Designed Manager and Implementation Manager assigned to the two senior developers
  • Process, Planning and Customer Interface Manager, more discipline personnel
Bupartech Case: The Project Strategy

- Conceptual Design worked pretty good
- When looking on the Development Strategy and the Products Process
  - Based on ONE previous experience (from senior developers)
  - Inspections were added to decrease Failure Costs
  - Design Manager, guides on the development strategy.
    - Design was easy! Since they already had HLDs so they considered an extended version of the use-cases (including Pseudocode and an Interface-Data Base Relationship Matrix)
- Difficulties on Gross Estimates:
  - First estimate came to be 2 times bigger
  - Difficulties on visualized reuse components
Bupartech Case: Developing the PLAN

- MAIA Estimated Size (LOC)
  - 28 KLOC Added
  - 10KLOC Reused
- Estimated Productivity: 26 LOC/Hr.
  - From Detail Design to Integration Test on BPM Environment
- Estimated Effort
  - 1081.7 Task Hours
  - 12 task hours /week per team member
- Management Schedule vs. Team Schedule
  - 12 Weeks vs 14 Weeks
- Quality: Reaching 60% Inspection Yields
Bupartech Case: On the ROAD

- Week #1
  - Some Scripts and Role Responsibilities were to be handled
  - First Week involved a half week jBPM training

- Week #3
  - Some components reached CODE and the Design Strategy appears to be inadequate for Junior Developers
  - Design Manager (senior dev.) is re-assigned 50% availability, since he is on other critical project.

- Week #7
  - Design Manager, quits the team and company!
  - Team was worried but committed!
Schedule: Earn Value

Baseline: 16 Weeks (12/27/2010)
Replan (on W16): 17 Weeks 1/3/2011

1 week late!
5% Error on Re-planed Schedule
Earned Value: Max Dev. Error of 10%

Maximum Error = 10%

After the second week, the team kept between a +/- 10% error in schedule.
Delivery was 5% behind schedule!

After the second week, the team kept between a +/- 10% error in schedule

Delivery Error = 5%
Task Hours: Productivity Increased 54%

Planned and Actual Hours per Week

- Planned Hours
- Actual Hours
- Baseline Plan Hours

Checkpoint

82.7 Task Hours/Week

53.4 Task Hours/Week

+54%
Earn Value: Increased Performance

- Earned Value
  - Planned Value
  - Earned Value
  - Predicted Earned Value
  - Baseline PV

- Checkpoint
- 5.8 EV / Week
- 5.3 EV / Week

+9%
Time Distribution and Cost of Quality

Actual Time in Phase Percent for Assembly SYSTEM

- % Planning: 8%
- % Design: 10%
- % Code: 25%
- % Failure COQ: 19%
- % Appraisal COQ: 31.8%

A/F ratio: 2.26
Defects Distribution

Actual Defects Injected in Phase Percent for Assembly SYSTEM

Actual Defects Removed in Phase Percent for Assembly SYSTEM

- Code
- Compile
- Code Review
- DLD Review
- Detailed Design
- Build and Integration Test
- Unit Test
- Code Inspection
- Code Review
- DLD Inspection
- Compile

4.1%
Lesson Learned: Focus on Reviews!
Lesson Learned: Focus on Reviews!

![Bar chart showing process yield for assembly SYSTEM]

- 6.7 def / kLOC
- 4.6 def / kLOC

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Hector Gonzalez-Santos  Pablo Henriquez V.
Quality need some improvement!

- Reviews were done at an appropriate rate, but still many defects filtered on to Unit Test
  - Few defects found on DLDR (detaill level design review)
  - Checklist needed improvement

- Low Yields (Reviews and Inspections)
  - DLDINSPI: 61% Yield and DRL 1.33 (vs. UT)
  - CODEINSPI: 33% Yield and DRL 1.04 (vs. UT)
Bupartech Case: TSP Post-mortem Lessons

- Improve Size Estimate
  - Consolidate historic data and define appropriate relative size tables
  - Granularity
- Focus on Reviews
  - Update personal review checklist to increase Yields
- Focus on Design
  - Adjust and Improve the design strategy
  - Implement Verification Techniques
Outstanding Point from this TSP Team

- High: Coordination, Commitment and Attitude

- Support, Motivation and Leadership
  - Team included “standup meetings”, good communication
  - Discipline in following scripts and role ownership

- Jelled team
  - Zero conflicts between team members, even though one senior developer left the team
  - Self directed team, worked out on solving problems
Mexican Engineers are convinced that **PSP is key** to be prepared to **success** in a global competitive environment.

<table>
<thead>
<tr>
<th></th>
<th>First Program</th>
<th>Last Program</th>
<th>Last/First</th>
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<tbody>
<tr>
<td>Average LOC</td>
<td>98.9</td>
<td>116.4</td>
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<tr>
<td>Time Accuracy</td>
<td>-22.7%</td>
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<td>Productivity (LOC/Hr)</td>
<td>39.1</td>
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<td>% of design time</td>
<td>11.2%</td>
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<td>% Failure COQ (% Time in Compile and UT)</td>
<td>26.3%</td>
<td>10.5%</td>
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<tr>
<td>% of compile time</td>
<td>10.10%</td>
<td>1.80%</td>
<td>0.18</td>
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<tr>
<td>% of test time</td>
<td>16.20%</td>
<td>8.73%</td>
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<tr>
<td>Defect Density per KLOC</td>
<td>91.5</td>
<td>49.9</td>
<td>0.55</td>
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<tr>
<td>Defect Density at UT</td>
<td>23.8</td>
<td>9.3</td>
<td>0.39</td>
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<tr>
<td>Defect Density at COMP</td>
<td>53.2</td>
<td>6.1</td>
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<tr>
<td>% of defects removed before Compile</td>
<td>8.6%</td>
<td>80.0%</td>
<td>9.30</td>
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<tr>
<td>% of people with less than 5 total defects/KLOC</td>
<td>1.8%</td>
<td>16.6%</td>
<td>9.22</td>
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Ecuatorian Engineers are convinced that **PSP is key** to be prepared to **success** in a global competitive environment.

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<tr>
<td>Average LOC</td>
<td>159.5</td>
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<td>Time Accuracy</td>
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<td>Productivity (LOC/Hr)</td>
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<td>% of design time</td>
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<td>21.70%</td>
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<td>% of compile time</td>
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<td>Defect Density per KLOC</td>
<td>93.5</td>
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<td>Defect Density at COMP</td>
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<td>1.30%</td>
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<td>0.00%</td>
<td>50.00%</td>
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Performance Summary

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<td>0.23</td>
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<tr>
<td>% of test time</td>
<td>18.0%</td>
<td>7.5%</td>
<td>0.41</td>
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<tr>
<td>Defect Density per KLOC</td>
<td>75.0</td>
<td>26.9</td>
<td>0.35</td>
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<td>43.6</td>
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<td>0%</td>
<td>20%</td>
<td>&quot;inf&quot;</td>
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Successful Partnership

• Kernel Technologies and Procesix have been working together since 2010
  – Relationship based on professional excellence, honesty, ethic and commitment
  – Knowledge transfer
  – Shared objectives and goals
  – Complementary competencies
Thank you

• Héctor González Santos
  – Hsantos@kerneltechnologies.com
  – Hector.gonzalez@procesix.com

• Pablo Henríquez V.
  – Pablo.henriquez@procesix.com