Performance Benchmarking Consortium

NDIA CMMI Technology and Users Conference

Mark Kasunic
November 15, 2006
Presentation Topics

Introduction
- Overview – The Process Benchmarking Consortium
- Motivation & Benefits
- Ground covered

PBC Working Teams
- Concept of operations
- Voice of customer
- Specification

Next Steps
- Near-term goals
- How you can participate
What is Benchmarking?

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark</td>
<td>To take a measurement against a reference point.</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>A process of comparing and measuring an organization with business leaders anywhere in the world to gain information which will help the organization take action to improve its performance.</td>
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_The Benchmarking Management Guide_
_American Productivity and Quality Center_
# Types of Process Benchmarking

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<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Internal studies</td>
<td>Compare similar operations within different units of an organization.</td>
</tr>
<tr>
<td>Competitive studies</td>
<td>Target specific products, processes, or methods used by an organization’s direct competitors.</td>
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<tr>
<td>Functional or industry studies</td>
<td>Compare similar functions within the same broad industry or compare organizational performance with that of industry leaders.</td>
</tr>
<tr>
<td>Generic benchmarking</td>
<td>Compares work practices or processes that are independent of industry.</td>
</tr>
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</table>
**The Performance Benchmarking Consortium**

During April 2006, SEI launched a vendor and industry collaboration on benchmarking software project performance.

**Objectives**

- Provide tools and credible data for goal-setting and performance improvement
- To combine benchmark data from multiple repository sources thereby creating a superset of information for benchmark and/or performance comparison

**Value**

- Establish specifications for the collection and comparison of benchmark data from different vendor sources
- Allow companies to leverage existing data to help them establish and achieve their business goals
Current PBC Members as of October 2006

Consortium members are leaders in software measurement and benchmarking from consultancies, industry, and academia.

<table>
<thead>
<tr>
<th>David Consulting Group</th>
<th>PRTM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galorath Incorporated</td>
<td>QSM</td>
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<td>ISBSG</td>
<td>Raytheon</td>
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<td>Lockheed Martin</td>
<td>SEI</td>
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<td>Motorola</td>
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<td>Oracle</td>
<td>STTF</td>
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<tr>
<td>PRICE Systems</td>
<td>University of Ottawa</td>
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</tbody>
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* International Software Benchmarking Standards Group (ISBSG)

** Software Technology Transfer Finland (STTF)
Motivation

Organizations want a way to gauge their performance and to compare their performance with others in their industry.

Data on project performance is needed to demonstrate the impact of process improvement.

Benchmarks

- provide a reference point for interpreting performance
- facilitate interpretation by setting specifications for how performance measurements are collected
Is There Community Interest?

During June, 2006, the PBC conducted an initial survey to assess the voice of the customer.

- can authorize sharing of organization’s performance data
  
  12 out of 14
  or
  85.7%

- part of a team who can authorize sharing of organization’s performance data
  
  57 out of 63
  or
  90.5%

- assigns a high degree of value to software project performance benchmarks

Results of 2006 PBC Survey
• Sample size = 800
• Response Outcome = 25%
## Broader Data Provided by PBC

<table>
<thead>
<tr>
<th>Metric</th>
<th>Vendor 1</th>
<th>Vendor 2</th>
<th>Vendor 3</th>
<th>Vendor 4</th>
<th>Vendor 5</th>
<th>PBC</th>
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<tbody>
<tr>
<td>Software size</td>
<td>🅿️</td>
<td>🅿️</td>
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<td>🅿️</td>
<td>🅿️</td>
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<tr>
<td>Defect density</td>
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<td>🅷️</td>
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<tr>
<td>Defects by phase</td>
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<td>Productivity</td>
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<td>🅷️</td>
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<td>Schedule predictability</td>
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<tr>
<td>Effort</td>
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<tr>
<td>Customer satisfaction</td>
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**Granularity of Data**

MORE | LESS

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Broader Data Set Provided by PBC
PBC Provides Broader Coverage of Application Domains

Education
Insurance
Health and Medicine
Military Systems
Financial & Banking
Manufacturing
Electronics
Communications
Presentation Topics

Introduction
• Overview – The Process Benchmarking Consortium
• Motivation & Benefits

→ Ground covered

PBC Working Teams
• Concept of operations
• Voice of customer
• Specification

Next Steps
• Near-term goals
• How you can participate
Ground Covered - 1

Kick-Off Workshop at SEI [April 19-20, 2006]

• 14 presentations by workshop attendees; Discussion of current benchmarking issues and ways to address them.

• Brainstorming issues on how to proceed.

• Initiative to conduct survey to obtain community input on factors most likely to affect software project performance.

• Performance Benchmarking Consortium (PBC) is born.

What is performance measurement?
What makes a benchmark good and useful?
What constitutes valid data if you are interested in learning about your range of results in comparison to other benchmarking companies?
How should performance measurements be categorized?
Ground Covered - 2

PBC Workshop [June 28-29, 2006]

- Initial survey addressing *performance factors* - results presented
- Planning and goal-setting
- Soliciting member input on the PBC business concept
- Initial concepts about PBC products and services
- Setting up work teams
Ground Covered - 3

PBC Workshop [October 4-5, 2006]

- Work team status reports and planning
- Discussion of ConOps (Concept of Operations)
- Presentations by Member Companies
- Discussion of PBC Measurement Specification
- Selection of initial set of performance influence factors and performance indicators that will populate version 1 of the PBC repository.
- PBC 2006 planning and 2007 goal-setting
PBC Member Alignment is Happening

Work during 2006 as focused on

• Developing a common understanding of the terrain
• Developing common goals
• Cultivating a shared commitment

April, 2006

October, 2006

2007
Current PBC Teams

- **ConOps Team**
  - Business planning
  - Communication planning
  - Concept of operations

- **Voice of Customer Team**
  - Soliciting community input
  - What do people need?

- **Specification Team**
  - Performance measurement definitions & guidance

- **Pilot Implementation Team**
  - Testing the solution components
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Concept of Operations - 1

- **Member Assets**
- **PBC Member Companies**
- **SEI**
  - **PBC Repository**
  - **Measurement Specification**
  - **PBC Performance Reports**
- **Subscriber Performance Data**
- **Subscriber Organizations**
  - Customized reports

Members provide services & reports to their internal or external customers using PBC Assets in addition to, or in combination with, their own.
Concept of Operations - 2

- **PBC Member Assets**
  - Using specification allows subscribers to make valid comparisons.
  - Becomes an ISO standard?

- **PBC Measurement Specification**

- **PBC Repository**

- **Subscriber Organizations**
  - Using specification allows subscribers to make valid comparisons.
  - Becomes an ISO standard?
**Concept of Operations - 3**

The SEI:
- authors Meas. Spec.
- houses the repository
- provides website & admin
- authors PBC Reports
- provides communication support

PBC Member Companies
- provide assets to stock the repository
- pay fee to sustain operations
- provide training & consultation

Subscriber Organizations
- Subscribers submit performance data that adheres to Meas. Spec.
- They pay fee for:
  - PBC Performance Reports
  - Customized reports

SEI
- houses the repository
- provides website & admin

PBC Repository
- Measurement Specification

Member companies:
- provide assets to stock the repository
- pay fee to sustain operations
- provide training & consultation
We are here.

But we want to be here.

PBC Subscriber

From PBC Performance Report

PBC

Member #1
Member #2
Member #3
Member #4
Member #5
Member #6
Member #7
Member #n

PBC Repository
Concept of Operations - 4 Benchmarking

Our client provided that measure. We can show you how they did it.
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Voice of Customer Team

This team is focused on ensuring that the voice of the customer is represented as PBC products are planned for development.

• Conducted a survey to obtain community input about factors that influence software project performance

• Planning a birds-of-feather session for next SEPG Conference to solicit community input to influence the development of PBC products and services
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Specification Team Work

The Spec Team is working to develop common definitions.

**Performance Influence Factors**
- Process maturity
- Application domain
- Stability of requirements
- Size
- Project type
- Team size
- Developers' functional knowledge

**Performance Indicators**
- Defect density
- **Time-to-market**
- Schedule predictability
- Productivity index
- Project delivery rate
Example: Time-to-market measure

S/W Project A
Meas. Definition A

S/W Project B
Meas. Definition B

S/W Project C
Meas. Definition C

S/W Project D
Meas. Definition D

How can you compare?
Specification Team – Building Common Definitions

Example: Time-to-market measure

S/W Project A
Meas. Definition A

S/W Project B
Meas. Definition B

S/W Project C
Meas. Definition C

S/W Project D
Meas. Definition D

The Specification Team
Specification Team – Building Common Definitions

Example: Time-to-market measure

A cool, refreshing *common definition* for “time-to-market” that permits valid comparisons between software projects
PBC Measurement Specification

- Using specification allows subscribers to make valid comparisons.
- Becomes an ISO standard?

Subscriber Inputs

PBC Member Assets

PBC Repository

Subscriber Organizations

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Near-Term Goals

The PBC will

- create a set of process specifications for the consistent and meaningful collection, analysis, and dissemination of comparative performance benchmarks for software projects
- develop a data model that will facilitate the aggregation and comparison of data from different sources
- pilot test solution components
- develop version 1.0 of the PBC data repository
Are You Interested?

- The PBC will be expanding membership during 2007.
- Individuals who become members during 2007 will participate in proof-of-concept trials and provide feedback on the PBC Concept of Operations.
- If your organization is interested in sponsoring you as a member or if you are interested in becoming a subscriber of future PBC products and services, then please send email to Mark at mkasunic@sei.cmu.edu
- Individuals who contact us will be added to our database. We will periodically send email about progress and future plans for the PBC.

Thank-you
# Acknowledgements

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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SEI

- Anita Carleton
- Robert Ferguson
- Diane Gibson
- Dennis Goldenson
- Oksana Schubert
- Robert Stoddard
- Dave Zubrow