Performance Benchmarking Consortium

NDIA CMMI Technology and Users Conference

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November 15, 2006

Software Engineering Institute | **Carnegie Mellon**

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?

Term	Description
Benchmark	To take a measurement against a reference point.
Benchmarking	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.

The Benchmarking Management Guide
American Productivity and Quality Center

Types of Process Benchmarking

Term	Description
Internal studies	Compare similar operations within different units of an organization.
Competitive studies	Target specific products, processes, or methods used by an organization's direct competitors.
Functional or industry studies	Compare similar functions within the same broad industry or compare organizational performance with that of industry leaders.
Generic benchmarking	Compares work practices or processes that are independent of industry.

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.

David Consulting Group	PRTM
Galorath Incorporated	QSM
ISBSG	Raytheon
Lockheed Martin	SEI
Motorola	SPR
Oracle	STTF
PRICE Systems	University of Ottawa

* 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

Cost   Quality

Schedule   Customer satisfaction
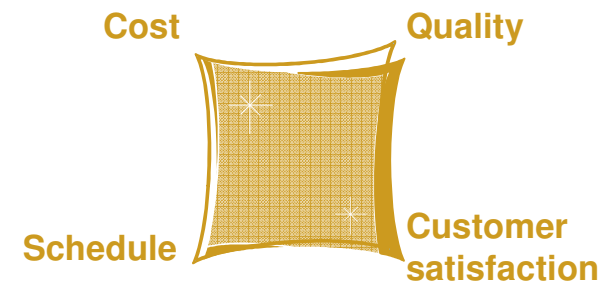
Is There Community Interest?

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

can authorize sharing of organization's performance data

&

assigns a high degree of value to software project performance benchmarks

**12 out of 14
or
85.7%**

part of a team who can authorize sharing of organization's performance data

&

assigns a high degree of value to software project performance benchmarks
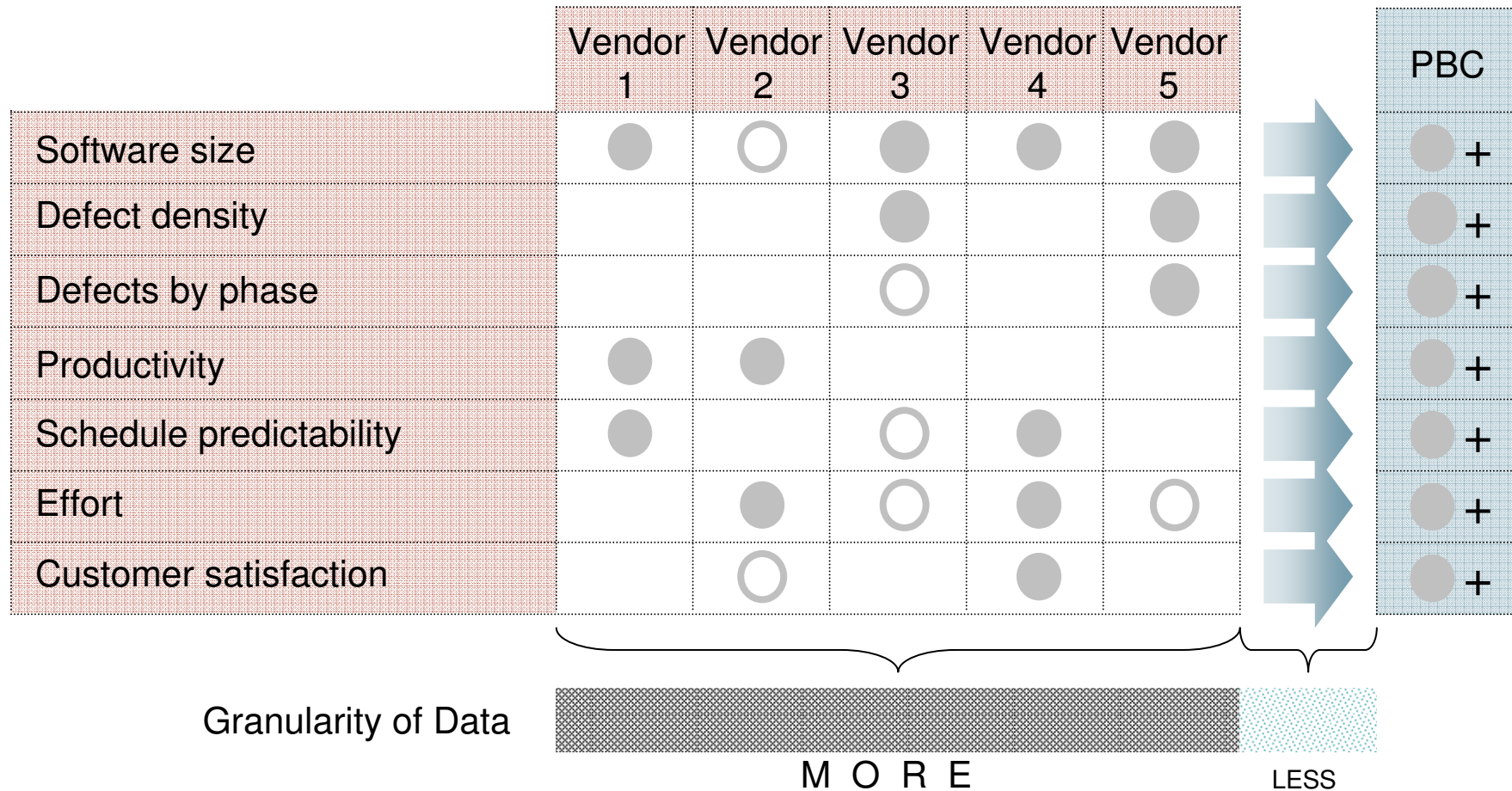
**57 out of 63
or
90.5%**

Results of 2006 PBC Survey
- Sample size = 800
- Response Outcome ≈ 25%

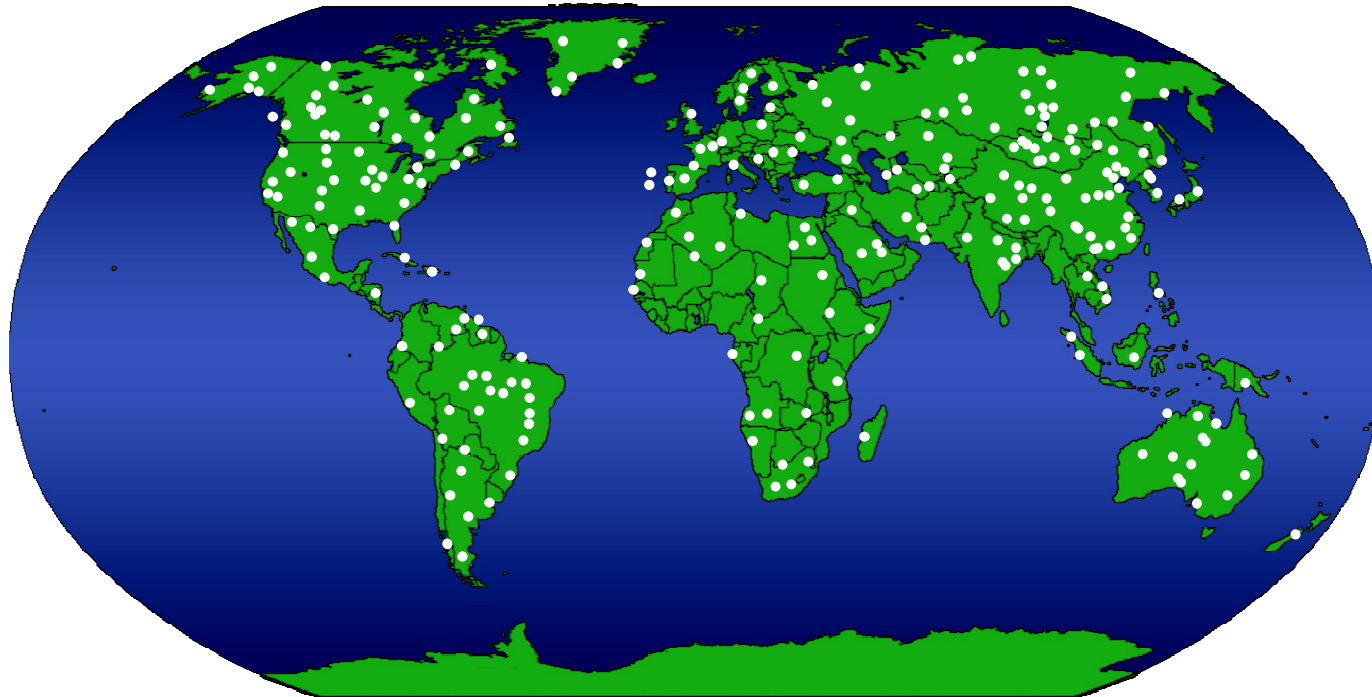# Broader Data Provided by PBC

	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5		PBC
Software size	●	○	●	●	●	⟹	● +
Defect density			●		●	⟹	● +
Defects by phase			○		●	⟹	● +
Productivity	●	●				⟹	● +
Schedule predictability	●		○	●		⟹	● +
Effort		●	○	●	○	⟹	● +
Customer satisfaction		○		●		⟹	● +

Granularity of Data

M O R E   LESS

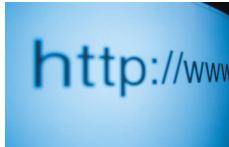# Broader Data Set Provided by PBC

PBC

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

PBC Provides Broader Coverage of Application Domains
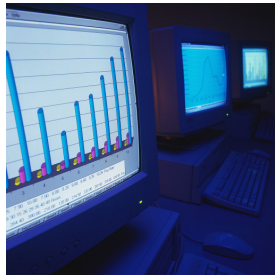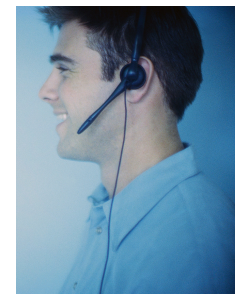
Education

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.

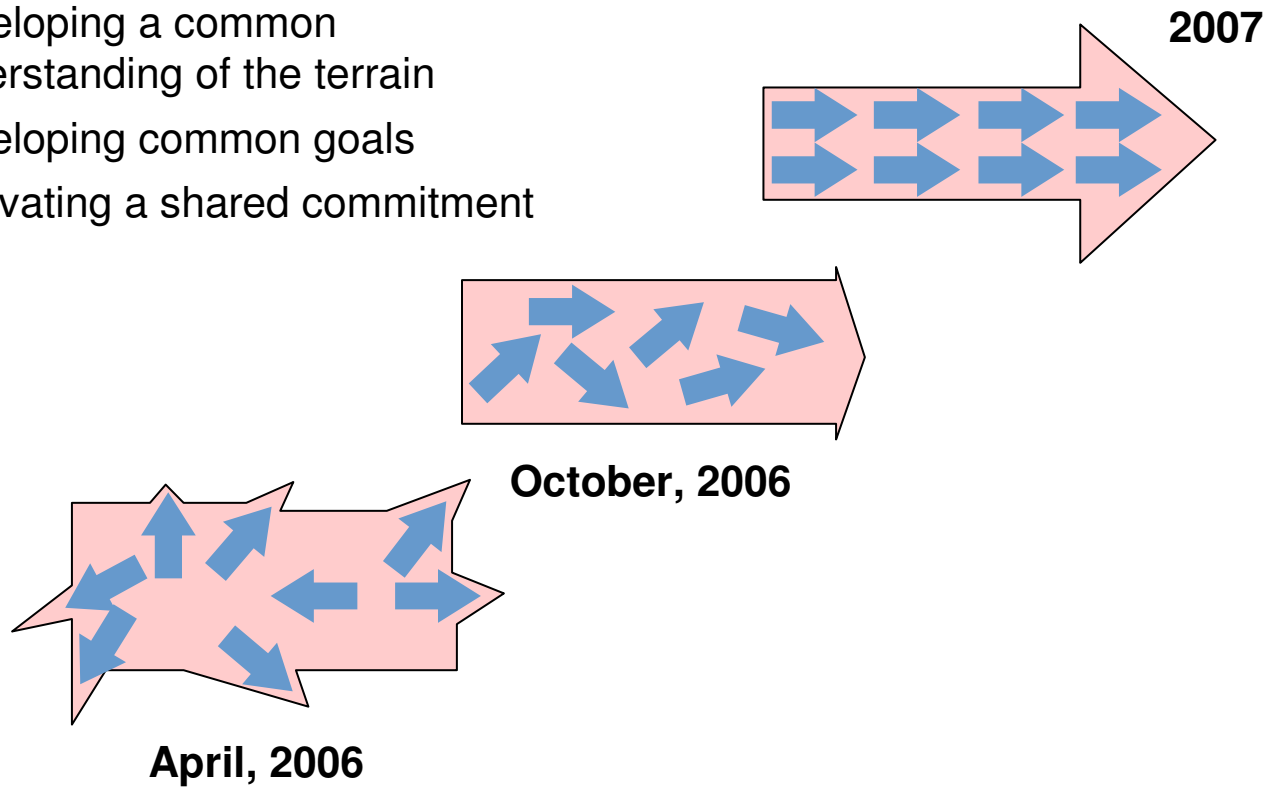- PBC 2006 planning and 2007 goal-setting
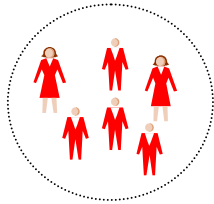
PBC Member Alignment is Happening

Work during 2006 as focused on

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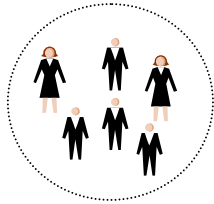- Cultivating a shared commitment

2007

October, 2006
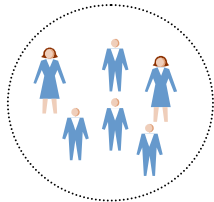
April, 2006

Current PBC Teams

ConOps Team

- Business planning
- Communication planning
- Concept of operations

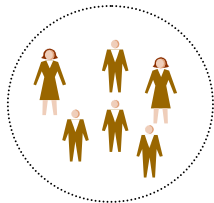**Voice of Customer Team**

- Soliciting community input
- What do people need?

Specification Team

- Performance measurement definitions & guidance

Pilot Implementation Team

- Testing the solution components

Presentation Topics

Introduction

- Overview – The Process Benchmarking Consortium

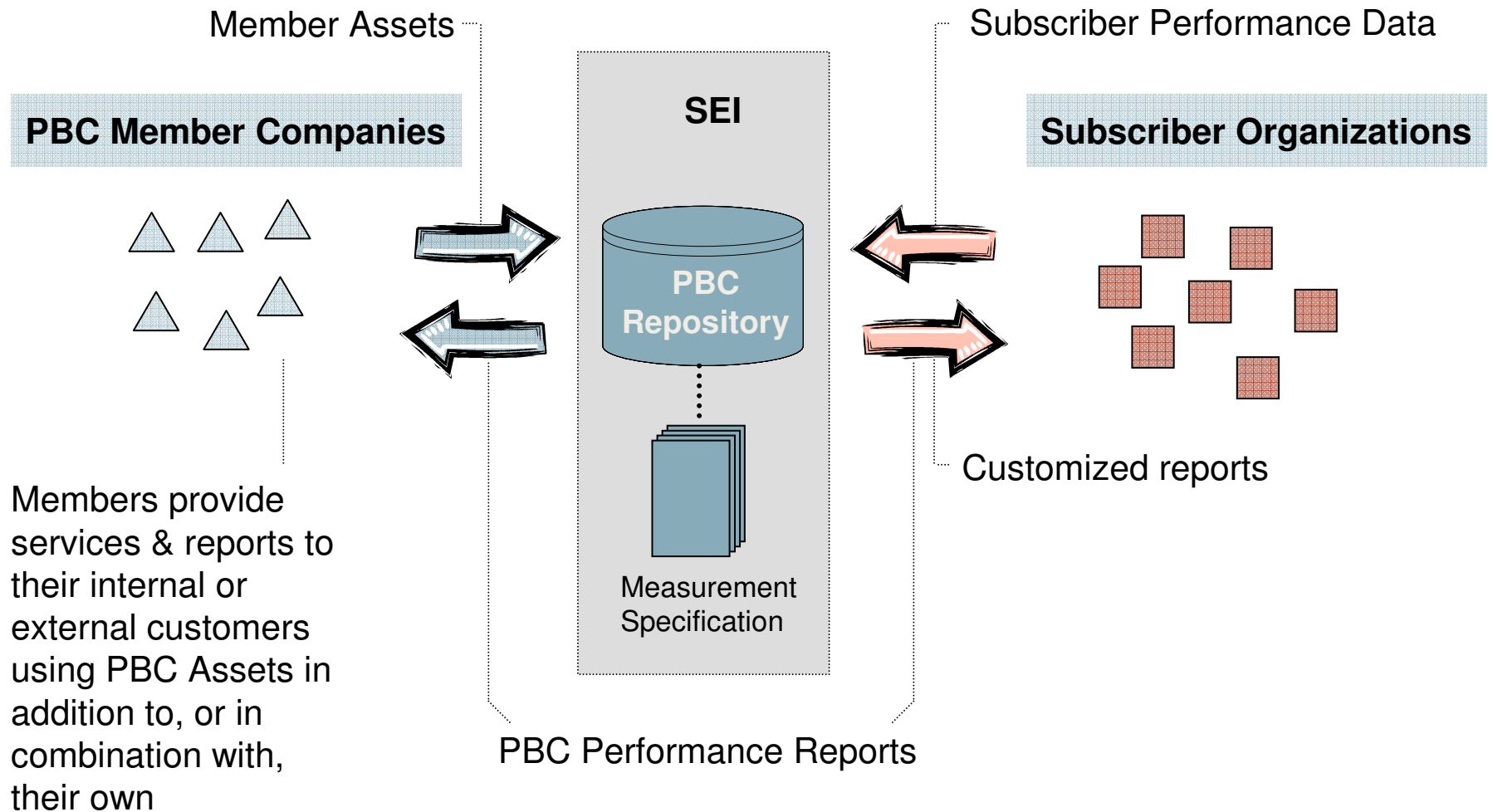- Motivation & Benefits

- Ground covered

PBC Working Teams

➡ Concept of Operations
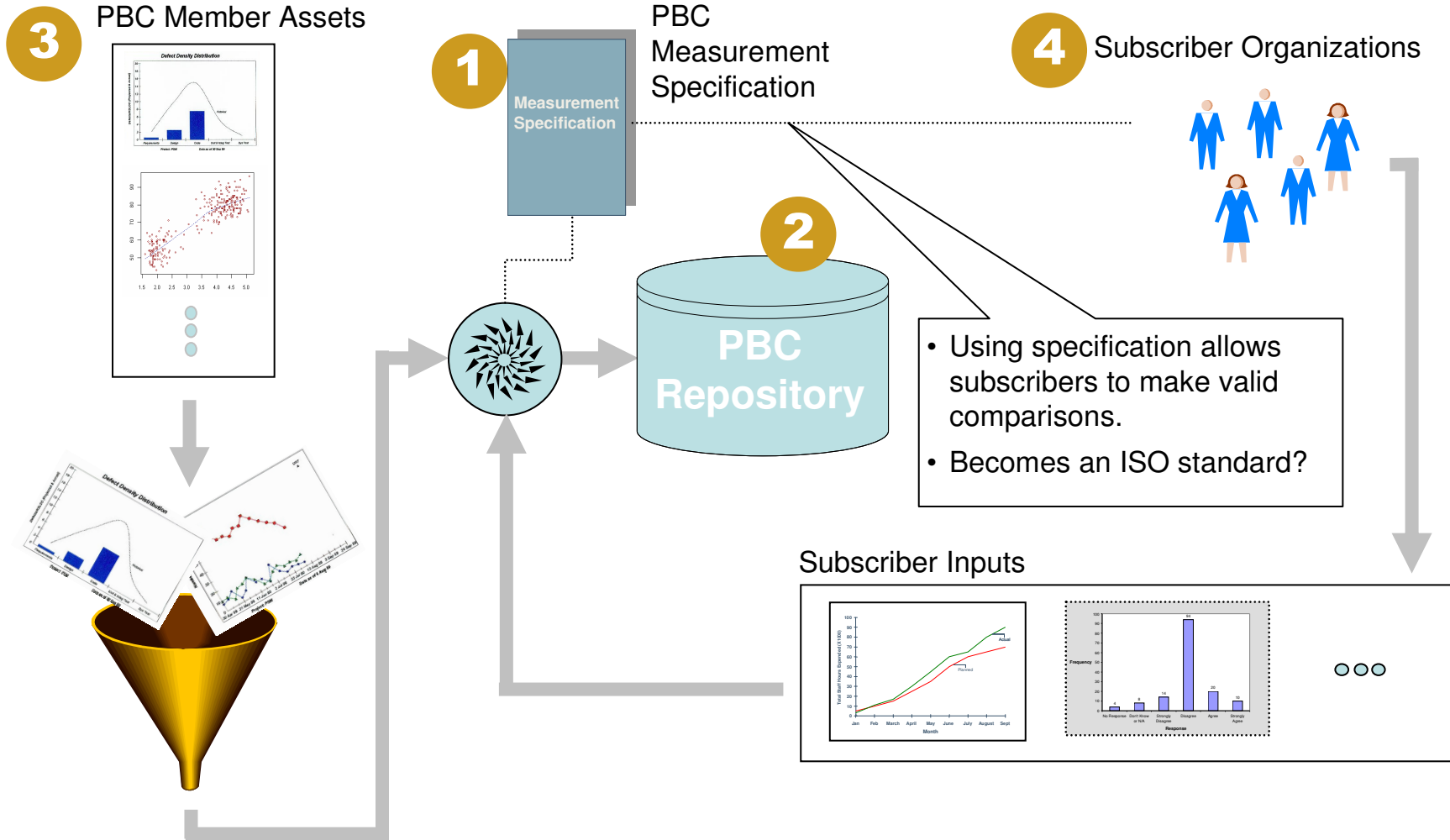
- Voice of Customer

- Specification

Next Steps

- Near-Term Goals

- How you can participate

Concept of Operations - 1

Member Assets

Subscriber Performance Data

PBC Member Companies

SEI

Subscriber Organizations

PBC Repository

Measurement Specification

Customized reports

Members provide services & reports to their internal or external customers using PBC Assets in addition to, or in combination with, their own

PBC Performance Reports

Concept of Operations - 2

3 PBC Member Assets

1 Measurement Specification

PBC Measurement Specification

4 Subscriber Organizations

2 PBC Repository

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

Subscriber Inputs
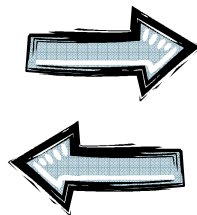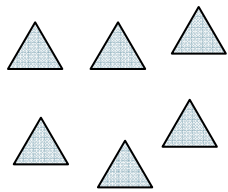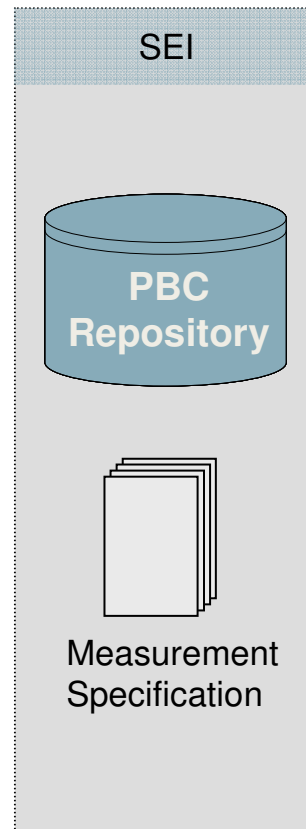
Concept of Operations - 3

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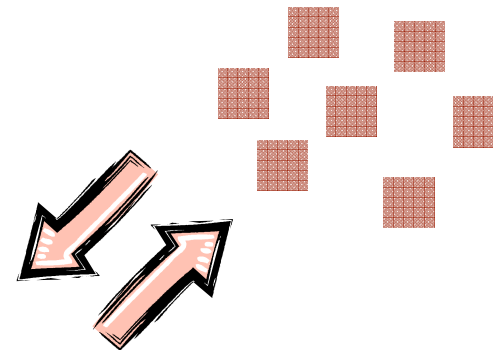- provides communication support

PBC Member Companies

Member companies:
- provide assets to stock the repository
- collaborate on Meas. Spec.
- pay fee to sustain operations
- provide training & consultation

SEI

PBC Repository

Measurement Specification

Subscriber Organizations

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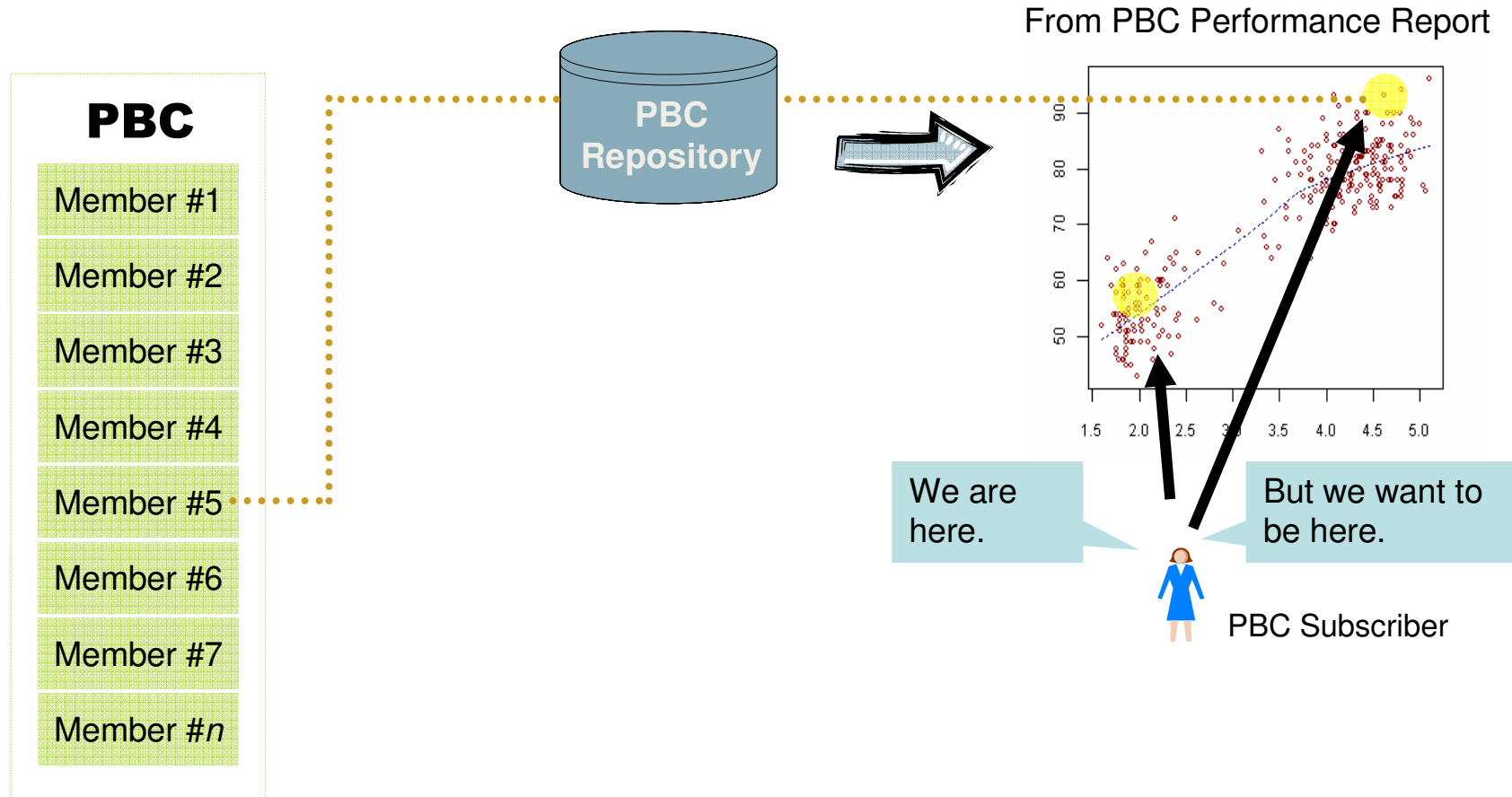
They pay fee for:
- PBC Performance Reports
- Customized reports

Concept of Operations - 3
Benchmarking

From PBC Performance Report

PBC

Member #1

Member #2

Member #3

Member #4

Member #5

Member #6

Member #7

Member #*n*

PBC Repository

We are here.

But we want to be here.

PBC Subscriber

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Concept of Operations - 4 Benchmarking
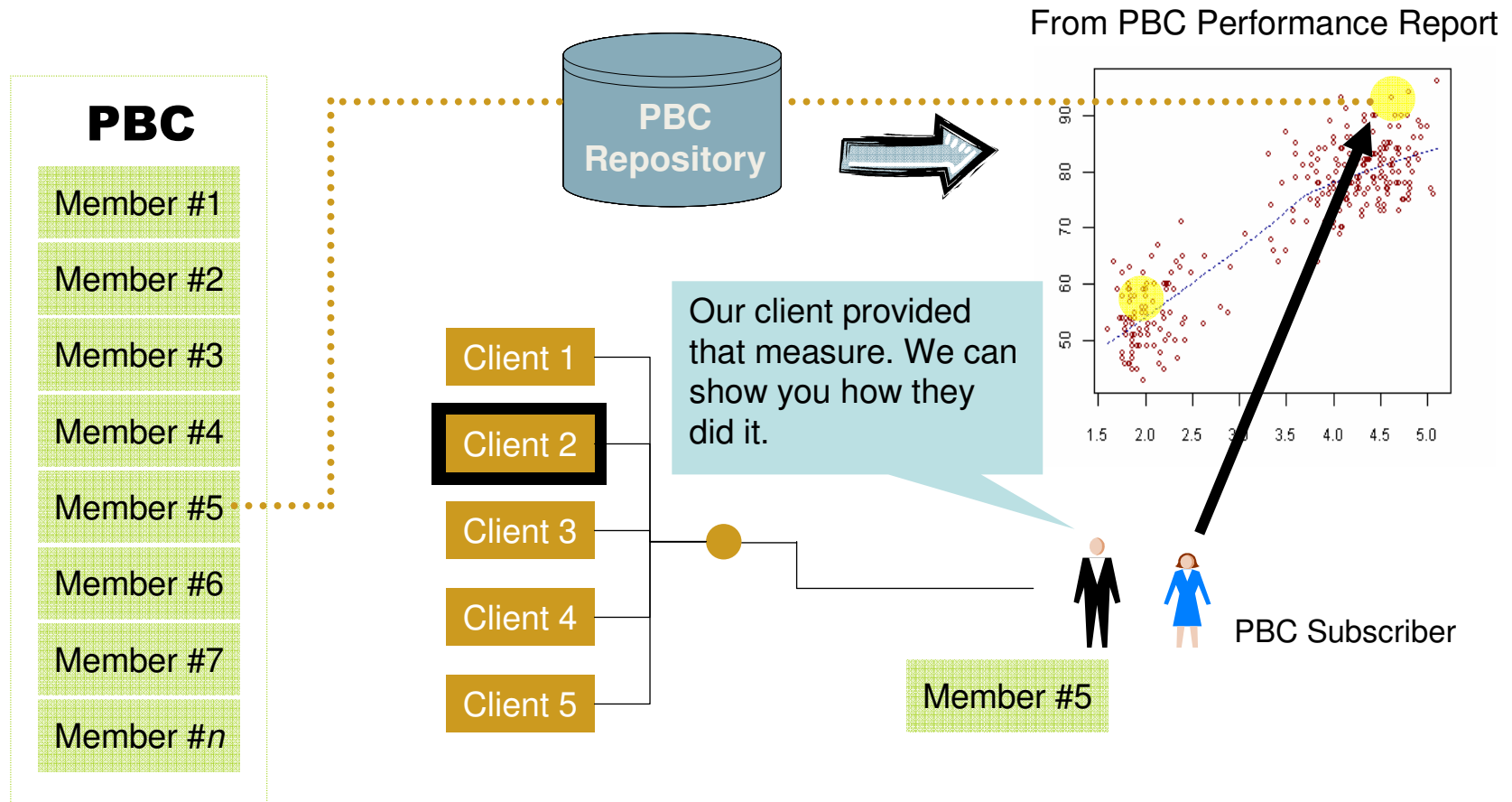
From PBC Performance Report

PBC

Member #1

Member #2

Member #3

Member #4

Member #5

Member #6

Member #7

Member #n

PBC Repository

Client 1

Client 2

Client 3

Client 4

Client 5

Our client provided that measure. We can show you how they did it.

PBC Subscriber

Member #5

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PBC Working Teams

- Concept of Operations
- → Voice of Customer
- Specification

Next Steps

- Near-Term Goals
- How you can participate

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

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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
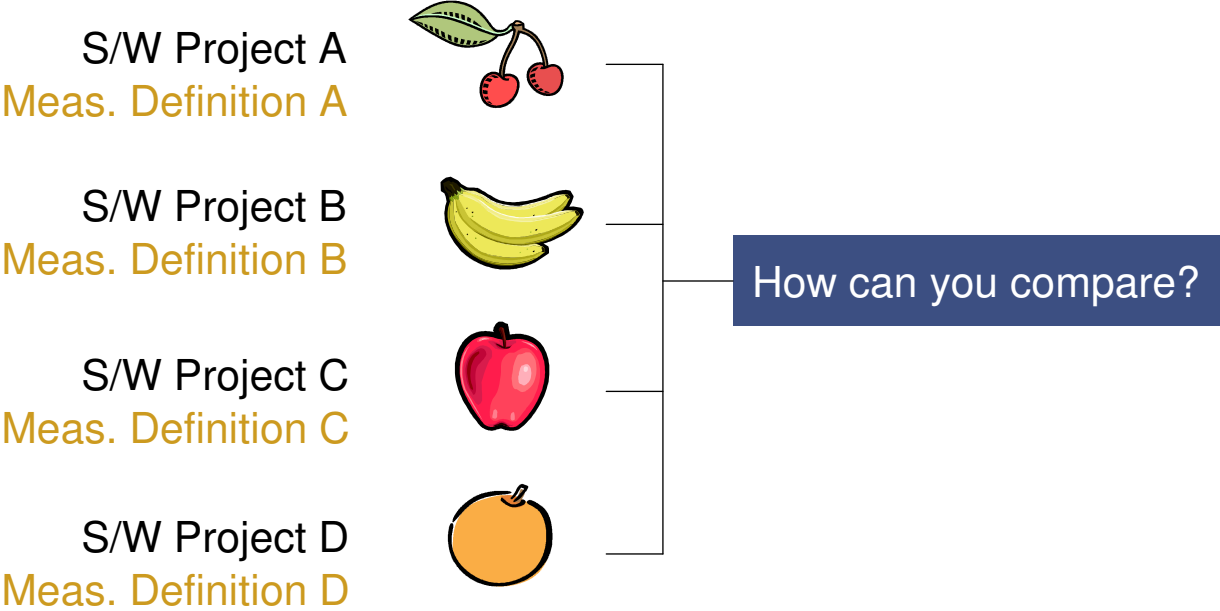- Project type
- Team size
- Developers' functional knowledge

Performance Indicators

- Defect density
- Time-to-market
- Schedule predictability
- Productivity index
- Project delivery rate

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

How can you compare?

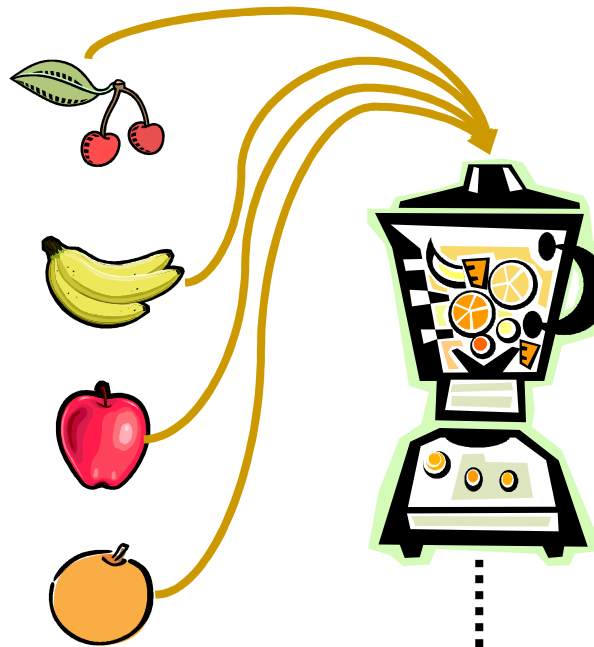# Specification Team – Building Common Definitions

Example: Time-to-market measure

S/W Project A
Meas. Definition A

S/W Project B
Meas. Definition B

S/W Project C
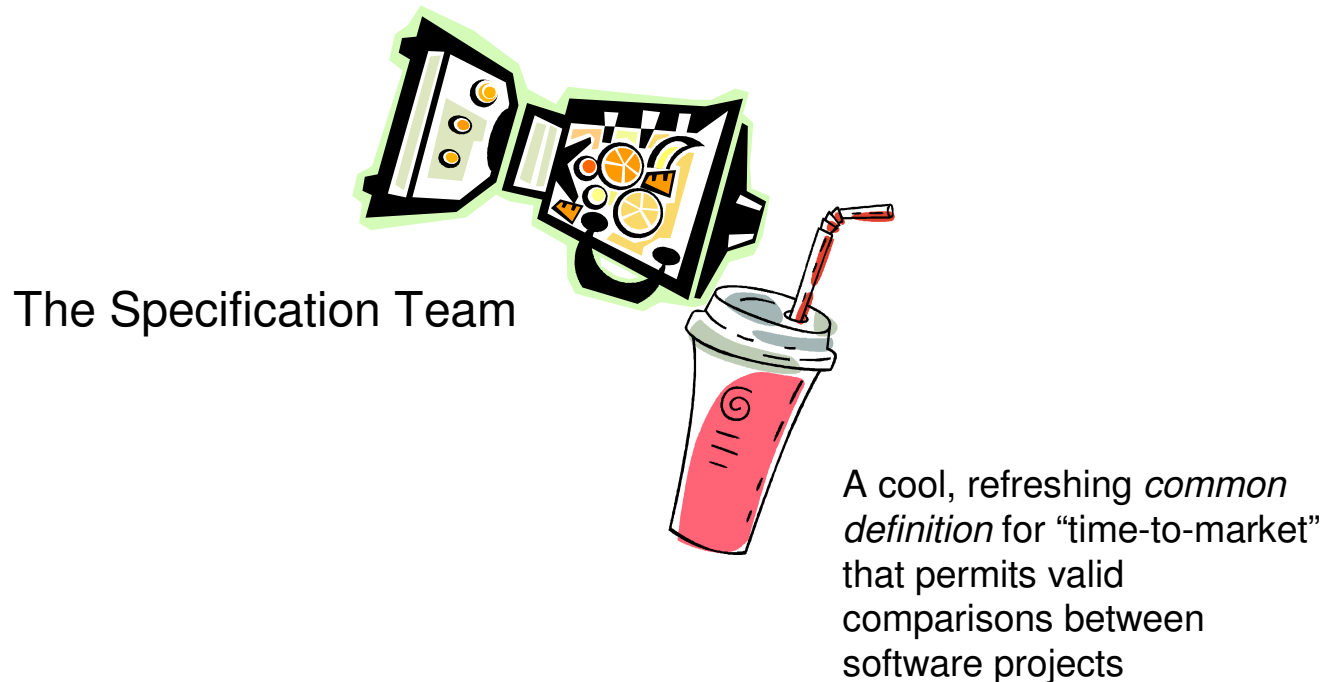Meas. Definition C

S/W Project D
Meas. Definition D

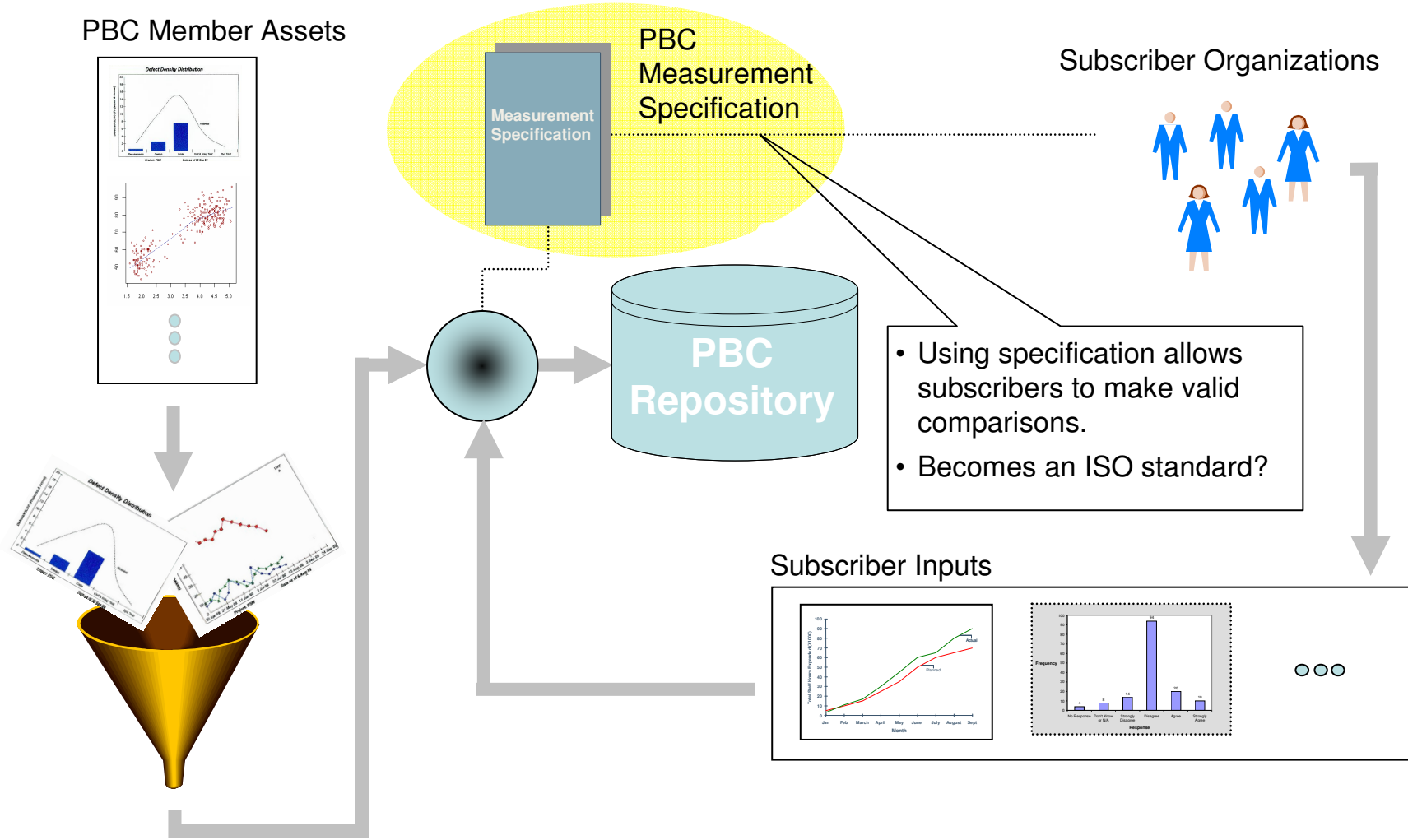The Specification Team

Specification Team – Building Common Definitions

Example: Time-to-market measure

The Specification Team

A cool, refreshing *common definition* for "time-to-market" that permits valid comparisons between software projects

PBC Measurement Specification

PBC Member Assets

Measurement Specification

PBC Measurement Specification

Subscriber Organizations

PBC Repository

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

Subscriber Inputs

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➡ Next Steps

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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
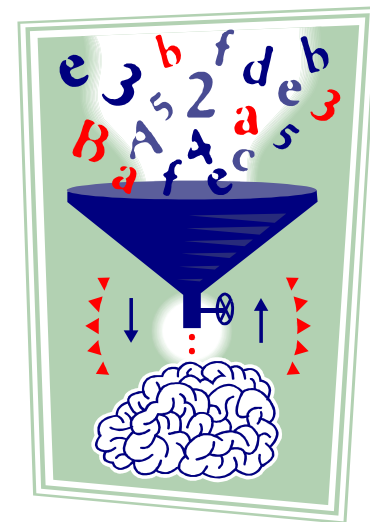
Are You Interested?

❖ 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

Kate Armel	QSM
Michael Bragen	SPR
Khaled El Emam	University of Ottawa
Eric Finch	PRTM
Robert Floyd	Raytheon
Pekka Forselius	STTF
David Garmus	David Consulting Group
Peter Hill	ISBSG
Tim Hohmann	Galorath, Incorporated
Thomas Lienhard	Raytheon
Larry McCarthy	Motorola
Arlene Minkiewicz	PRICE Systems
Kristal Ray	Oracle
Suresh Subramanian	PRTM
Bob Weiser	Lockheed Martin

SEI

Anita Carleton

Robert Ferguson

Diane Gibson

Dennis Goldenson

Oksana Schubert

Robert Stoddard

Dave Zubrow

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