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MEASURING FOR BUSINESS

With all the focus on how to measure . . .

Have We Forgotten
WHY we Measure?

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Goals of the Presentation

Quick hits on:

- **The wrong reasons for measuring**

- **Why we measure**

- **Measurements at a personal, team, and organizational level**

- **Reminder: Measurements may not lead to a better choice**

- **Warning: Measurement interpretation may make your situation worse**

- **Closing thoughts . . .**

Abstract

Have We Forgotten Why We Measure?

Measurement is not new to those in the software industry, nor is it new to the world. Measurements can be traced throughout history; even the fourth book in the Bible is entitled the book of Numbers. Today, organizations are pursuing "analytics" and "big data" as they search for a competitive-edge in a rapidly spinning world.

As software measurement evangelists and process improvement enthusiasts, methods and certifications can cloud why we are measuring. This presentation reminds us about the motivation for measuring. Bigger is not always better. More is not always superior. And faster may sometimes make us slower. Even "good" numbers can lead to bad decisions and the psychology of decision-making can actually foster poorer results. Perfect measures are not our goal.   Join us to remember why we measure and its impact on persons, teams, and organizations.

The Wrong Reasons (usually) to Measure

- **Because everyone else is doing it**
- **Measuring keeps the boss away (or focus attention elsewhere); aka "The boss expects me / us to have measures"**
- **To be a certain "level" or certification**
- **Because it's FUN (are you crazy?)**
- **Measurement numbers make for interesting publications and conference presentations**

Why Do We Measure?

310,000,000 related Google hits on this topic; 1-13-2014

- **To discover (I don't know or am curious) or verify (I think I am) "where" you are (baseline)**

And then . . .

- **To improve a position (sometimes by worsening the position of others); this may include predictive capabilities**

- **To sustain a position**

Any of these can be used to portray stewardship; *Why We Should Measure Performance***;** Oak Ridge Associated Universities, 2005

Why We Measure in Poetic Form

Measures here, measures there, measures measures everywhere.

Some go up, others down, measurement analysts alarm they sound.

With profits at risk costs get slashed; all the while, products get trashed.

Stock price falling, earnings slide. More data more answers, will help us get by.

Offshore it, lean it, tweak it now. Write a process and improve it, that's the how.

When all that's said has all been done, will we remember WHY it all begun?

Joe Schofield, 1-22-2014

Some Measurement *Types*

- **Personal measurements**
  - People will always be measured[1]
  - Not all measures will be objective or void of subjectivity
  - At least some people will always regard the measures as incorrect
  - People who are measured will continue to exercise one of at least three options:
    - Ignore 'em, a.k.a.: wait 'n see, "this too shall pass"
    - Sift them for useful feedback and act upon it
    - Do their best to make the numbers look good, usually without the intended effect

- **Team measurements** (see personal measurements) [2]; substitute "teams" where the word "people" occurs

- **Organizational measurements** (see personal measurements); substitute "organizations" or "business" where the word "people" occurs

[1]consider feedback as a form of self-measurement; see *What Do We Measure and Why? Questions About The Uses of Measurement;* Journal for Strategic Performance Measurement; June 1999; Wheatley and Kellner-Rogers
[2]*How & Why We Measure Performance*; Yale New-Haven Hospital; http://www.ynhh.org/patient-information/performance-measures.aspx

An example of "making the numbers look good" without the intended effect . . .

Which i

Not to be confused with real loss of inches

FACEBOOK BANS WEIGHT LOSS PHOTO

An example of "curiosity"

How many Fruit Loops are in my bowl?

101
Which color appears most often?
Purple with 23
And then which?
Yellow with 21
Which color appears least often?
Orange with 11
If I flip the fruit loops do I get a Pareto chart (of sorts)?

Curiosity begets curiosity

Fruit Loops are like software measurement

- We ask "how many are there"? (101)
- Which features (colors) are most prominent?
- Which features are least prominent?
- When can I get (eat) it?
- What will it cost me?
- Some get broken (defective) in the process.

Measurement Controversy – Measuring People (173M google hits, 1/9/2014)

NO

- I don't believe in *measuring people's* performance. There's just too much anecdotal and research evidence that suggests it does more harm that good.

  How to Measure People's Performance; Stacey Barr; staceybarr.com/questions/howtomeasurepeople/

vs.

YES

- The Metrus Group was able to obtain information on return on investment (ROI) for 78 companies whose employees participated in the study and on return on assets (ROA) for 112. In those organizations in which people measures are part of a balanced set of measures used by leadership teams to help manage their businesses, five-year ROI is 146%, compared to 97% in other organizations, and one-year ROA is 4.6% vs. 1.9% in other organizations.

  Measuring People and Performance: Closing the Gaps; Quality Texas; BS Morgan; 1999

YES

- A recent study (ProActive) that attempted to bring about increases in physical activity found that all three experimental groups increased their physical activity by the equivalent of 20 minutes brisk walking per day (Kinmonth et al., 2008). The authors attributed this, at least in part, to a measurement reactivity effect: by assessing motivation using questionnaires, objective behaviour using heart-rate monitors and a treadmill exercise test, and a variety of physiological measures, participants may not only have become more convinced of the importance of physical activity but may also have become aware of their own low levels of activity and gained some insight into the psychological processes by which an increase might be brought about.

  Methods: Does Measuring People Change Them?; The Psychologist, Vol. 24, Part 4; David P. French and Stephen Sutton

Why do we measure people?

Measurements in Professional Sports (Teams) – analytics in the sports industry (26M hits)

7th annual MIT Sloan Sports Analytics Conference
- March 1–2, 2013 at the Boston Convention & Exhibition Center
- Attendance grew by over 25% from 2012 to more than 2,700 guests
- Featured 125 panelists across 30 panels
- Theme – "Going Back to the Data" the evolving competitive advantage analytics provides

Panels included
- the rise of probabilistic thinking using objective data in decision making across all disciplines
- whether or not coaches get fired with too great a frequency, and what the data tells us about how these breakups impact performance.

http://en.wikipedia.org/wiki/MIT_Sloan_Sports_Analytics_Conference; retrieved 1/9/2014

Challenges with Team Measurements

- **Teams may design their own measurement systems which may not meet the needs of the organization**
- **Teams may spend more time on what the measures indicate and too little time on improving overall performance**
- **Teams may build their own dashboards (burndown charts, velocity charts, EVM charts) but each team's unique dashboard may become ambiguated at the organizational level**
- **Teams rarely have measurement specialists on their teams to develop, analyze, or improve measurement systems**

How the right measures help teams excel; C Meyer; Harvard Business Review ; 1994

Why do teams measure?

Measurement within Organizations

(these are "hows")

Consumers include:

- Stakeholders
- Customers
- Teams
- the organization (managers)

Examples include:

- Balanced Scorecard (Kaplan and Norton, 1993, 1996, 2001) [1]
- Cambridge Performance Measurement Process (Neely, 1996)
  Performance Prism (Neely, 2002)
- 7-step TPM Process (Zigon, 1999)
- TPM Process (Jones and Schilling, 2000)

Why do organizations (businesses) measure?

[1]While the Balanced Scorecard is widely used, a single measurement set is not accepted within the measurement community. (perhaps none intended)

Personal Measurements

Subjective

- I'm feeling tired today
- My pants are a little tight
- I don't feel a day over 50

Objective

- My thyroid medication was reduced by 30 percent
- My weight is up two pounds this week
- I celebrated my 40th birthday yesterday

Team Measurements

Subjective

- We are gaining momentum
- We are getting smarter about sizing stories
- Our team spirit has never been higher

Objective

- Our program's budget is up 3 percent over last year
- We are 15 days late on delivery of milestone 2
- Two additional resources (1.2 FTEs) will be added to the team next week

Organizational Measurements

Subjective

- **Next year we can better leverage our new assets**
- **After the re-organization we are better positioned to take advantage of future opportunities**
- **We won our third straight "company of the year" award in our industry**

Objective

- **IT spending will increase $6M next quarter**
- **We need to reduce our staffing by 40 persons next year**
- **Defect removal efficiency increased 38 percent last quarter**

Understanding what the data means

About the Pepsi challenge and why it's meaningless

- Coke's initial reaction to the Pepsi Challenge was to dispute its findings. But Coca-Cola found the same thing – 57 percent – preferred Pepsi.
- In September of 1984, Coca-Cola tested what would end up as the final version of New Coke. New Coke beat Pepsi by 6 to 8 … the company's CEO, Roberto C. Goizueta, called the new product "the surest move the company's ever made…"

Sometimes a sip tastes good and a whole bottle doesn't. That's why home-use tests give you better information.

- "If you only test a sip, consumers will like the sweeter product…"
- Pepsi is sweeter than Coke, so right away it had a big advantage in a sip test . . .   Pepsi is a drink built to shine in a sip test.

Blink – the power of Thinking without Thinking;
**Malcolm Gladwell**
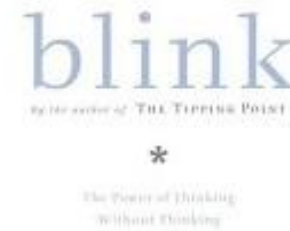
Unintended consequences . . .

In an attempt to raise test scores in Chicago schools, teachers updated (erased and changed) answers on their students' achievement tests.

Oops, they changed the same question answers such that every student had the right (and sometimes) the wrong answer in a series of questions where that was virtually impossible.

Younger less qualified teachers made up the bulk of the 5 percent suspected of cheating. A small number of these were fired.

The World is Flat; Thomas Friedman
Keynote ISMA Cinco!; Ricardo Valerdi
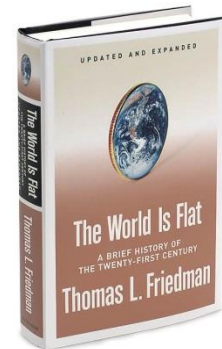
Global Measurements

- **Population**
- **Economics**
- **Energy**
- **"Warming" -**

Why do we measure any of these?

On ice: Stranded scientists ring in 2014

74 SCIENTISTS, TOURISTS AND CREW who set off on an expedition to prove climate change are ringing in the new year in the same place where they have been for the past week: stuck in ice at the bottom of the world.

- Revelers begin ringing in 2014 with fireworks
- FOX NEWS POLL: Majority give 2013 thumbs-up, feel economic optimism
- Poll: Americans hopeful for a better 2014
- OPINION: Choose to make 2014 a New Year of love and trust
- OPINION: Could 2014 bring a course correction for Team Obama?

Wait, it could get worse . . .

When people make interventions . . . in most of the cases the intervention intended to improve the process actually causes outcomes to get worse before they get better, if they get better at all.
Underestimation in the "When It Gets Worse Before it Gets Better" Phenomenon in Process Improvement; Advanced Concurrent Engineering, 2011, Part 1, 3-10, DOI: 10.1007/978-0-85729-799-0_1 Ricardo Valerdi and Braulio Fernandes

The cognitive approach has identified a number of erroneous beliefs held by gamblers, which cause them to over-estimate their chances of winning.
Decision-making during gambling: an integration of cognitive and psychobiological approaches; Luke Clark

Research has shown that the confidence individuals express in their judgments generally exceeds the accuracy of those judgments on difficult tasks.
ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES 48, 100-130 (1991); Influences on the Appropriateness of Confidence in Judgment: Practice, Effort, Information, and Decision-Making; PAUL W. PAESE, University of Missouri-St. Louis; JANET A. SNIEZEK

Software and measurement professionals have demonstrated that estimation results—which weren't very close originally—often grow worse when subjected to competition and pressure to succeed.
Measurements, Biases, Judgments: Understanding Variations for Reliable Estimates; Keynote Address - Sao Paulo, Brazil; Brazilian Software Measurement & Analysis Conference; November 11, 2011; Joe Schofield

"I used to think I was better when I wasn't very good at all (or I didn't know how bad I was)."

Takeaways

Why do we measure:

To discover or verify (KNOW) "where" you are

- ❑ **To improve a position**
- ❑ **To sustain a position**

These appear to be true for persons, teams, and organizations / businesses

(Why do) Bad things happen to good measurement people. (misinterpretation of the data or the context)

It would be nice if all of the data which sociologists require could be enumerated because then we could run them through IBM machines and draw charts as the economists do. However, **not everything that can be counted counts, and not everything that counts can be counted.** William Bruce Cameron; 1963; Informal Sociology: *A Casual Introduction to Sociological Thinking* http://quoteinvestigator.com/2010/05/26/everything-counts-einstein/ retrieved 1-22-2014

Questions

THANK YOU!
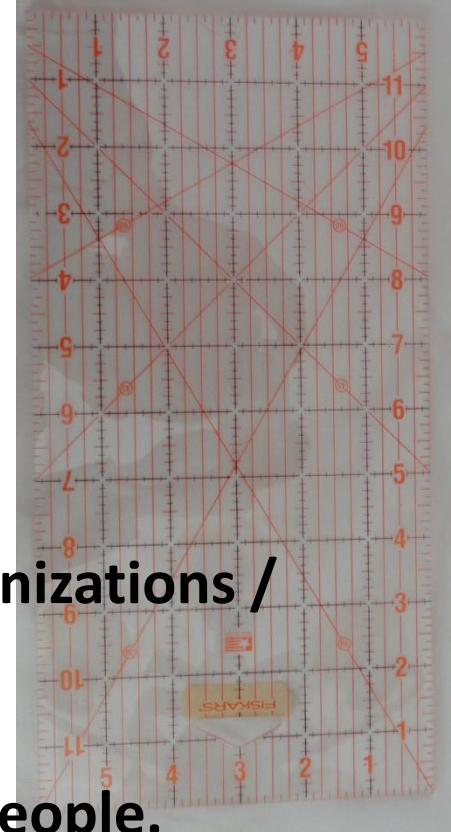
Further Reading

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Underestimation in the "When It Gets Worse Before it Gets Better" Phenomenon in Process Improvement; Advanced Concurrent Engineering, 2011, Part 1, 3-10, DOI: 10.1007/978-0-85729-799-0_1

Ricardo Valerdi and Braulio Fernandes

Decision-making during gambling: an integration of cognitive and psychobiological approaches; Luke Clark ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES 48, 100-130 (1991); Influences on the Appropriateness of Confidence in Judgment: Practice, Effort, Information, and Decision-Making; PAUL W. PAESE, University of Missouri-St. Louis; JANET A. SNIEZEK

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About the presenter . . .

Joe Schofield is President Emeritus of the International Function Point Users Group. He retired from Sandia National Laboratories as a Distinguished Member of the Technical Staff after a 31-year career. During twelve of those years he served as the SEPG Chair for an organization of about 400 personnel which was awarded a SW-CMM® Level 3 in 2005. He continued as the migration lead to CMMI® Level 4 until his departure. He continues that commitment today by helping his clients excel in software and business improvement and measurement.

Joe has facilitated over 100 teams in the areas of software specification, team building and organizational planning by using lean six sigma and business process reengineering. Joe has taught graduate courses since 1990. He was a licensed girl's mid-school basketball coach for 21 seasons--the last five undefeated, over a span of 50 games.

http://joejr.com/presentd.htm (~55)

http://joejr.com/publishd.htm (~36)

He has over 80 published books, papers, conference presentations and keynotes—including contributions to the books *The IFPUG Guide to IT and Software Measurement (2012), IT Measurement, Certified Function Point Specialist Exam Guide, and The Economics of Software Quality.* He is a CMMI Institute-certified Instructor for the Introduction to the CMMI® and two other CMMI courses, Certified Software Quality Analyst, Certified Function Point Specialist, a Certified Software Measurement Specialist, and most recently a Certified Scrum Master.

Joe is a frequent presenter in the Software Best Practices Webinar Series sponsored by Computer Aid, Inc. Joe completed his Master's degree in MIS at the University of Arizona in 1980. By "others" he is known as a husband, father, son, and grandfather.