

QUALITY PLUS TECHNOLOGIES, INC.

Software and Technology Solutions

FP Basics - Clearing up Common Misconceptions

by Carol Dekkers, Quality Plus Technologies, Inc.

email: dekkers@qualityplustech.com

Published in IT Metrics Strategies Vol. II, No. 5, May 1996
--

The software industry still abounds with misconceptions about what Function Points are and what they can and cannot do. This point is illustrated by the following excerpt from a December 1995 column in a software magazine reporting on a session at the ASM (Application of Software Measurement) conference: "Because there is no standard definition of a function point, different companies exchanging benchmark results may end up comparing apples to oranges, leading to faulty conclusions."

The session was a debate about whether the software measurement industry was mature enough to support valid benchmarking. To quote Howard Rubin, there was a high degree of "verbal cross dressing" presented from both camps and neither side emerged as a clear winner. During the debate, terms such as function points, ISO standards, productivity and benchmarking data were tossed freely between the debaters before an audience largely unfamiliar with the finer points of function points and their relationship with productivity and benchmarking. The lack of a "standard" specifically referred to work effort reporting, (not to function points) and how variability in reported project hours can introduce inconsistencies in benchmark data. At the close of the session, the audience and both sides of the debate agreed that there is an increasing need for validated and consistent benchmarking data.

Why is there Misunderstanding about FP?

One reason for misinformation about function points and other measurement concepts is the current state of the software measurement industry itself. Currently there are a number of metrics organizations each focusing on a particular aspect of software measurement, but for the most part, they are not integrated. ASM is a conference held annually by Software Quality Engineering (SQE) that focuses on defect tracking and quality. It serves as a forum for software professionals to exchange expertise specifically in these topic areas. The International Function Point Users Group (IFPUG) is another metrics organization, but unlike ASM that is just a conference, is a ten year old professional organization with a focus on function point metrics. IFPUG's semiannual conferences focus on software measurement based on functional size measures. Although both types of conferences are committed to excellence in a particular area of software measurement, until recently there has been

minimal interaction between them.

Function Points and Measurement

Rules for counting function points are maintained and refined by IFPUG and published in the Counting Practices Manual (CPM) currently in release 4.0. The lack of knowledge and widespread usage of function points is less a reflection of their validity than their lack of mainstream publicity.

What, then, are function points? Function Points are a measure of software size based on an evaluation of the users' logical requirements. Similar to the square feet of a house, function points are independent of the methods, tools or development language used to build the software.

Just as the square foot size of a house does NOT equal the speed at which a house can be built or its construction time, the Function Point size does NOT equal productivity or work effort. Function points measure the size of software, and are independent of how the software is developed. This means that given a set of user requirements, the function point size of the software will be the same whether it is developed using COBOL or DB2, or using rapid application development (RAD) or structured development methods.

Work Effort

Work effort, however, depends on all of these things and more: the development language, tools and development methods, skills of the project team, amount of reuse, etc. Work effort, therefore is a dependent variable, whose units are hours or staff months.

Productivity

Productivity is the ratio of the developed software size (FP) divided by the work effort (in hours or staff months), and as such, is dependent on all of the same factors as work effort. It follows that there is more than one productivity rate to deliver software and each rate depends on the language, tools, methods, skills and amount of reuse among other things.

The Question of Benchmarking

Benchmarking in the context of the ASM debate referred to the comparison of productivity and quality data within and across organizations based on a database of software development projects.

Productivity calculations require work effort figures, function point size measures and the accompanying project attributes (such as development language). The function point measures are relatively consistent between projects that used the same function point counting release. Because they are supported by the IFPUG standard rules, function points are used reliably in productivity and quality equations.

Work effort figures however, are not standard. Inconsistencies abound within companies and between companies due to several non-standard aspects of work effort: WHO is included in the work effort (e.g., are part-time project personnel such as DBA's included or excluded?), WHAT tasks are included (e.g., what work breakdown

structure is used for a project), and HOW is a staff month defined (e.g., figures cite a range from a low of 120 hours to a high of 200 hours depending on the organization).

It is tempting to think that two productivity rates with the same units (for example, FP per hour) are comparable when they may be based on completely different definitions of work effort. Make sure you know the basis of each ratio before you attempt to compare them.

Summary

It is important to understand the difference between function points, work effort and productivity before benchmarking pros and cons can be discussed. As work progresses to define standards to consistently define work effort, our industry will benefit from reliable and comparable benchmark data.

Cooperative efforts between software measurement industry groups continue to grow and will greatly benefit the software industry through accurate information and an increased awareness about software measurement.

=====
Carol A. Dekkers is the President of Quality Plus Technologies, Inc. a management consulting firm specializing in quality initiatives, software metrics, and process improvement. She is a frequent presenter and trainer at both U.S and international quality and measurement conferences and is credentialed as a Certified Management Consultant (CMC), a Certified Function Point Specialist (CFPS), a professional engineer (Canada) and an Information Systems Professional (ISP). She is the Director of Counting Standards on the IFPUG Board of Directors and is a project editor within the ISO Functional Size Measurement workgroup (ISO/IEC/JTC1/SC7 WG12). Contact Carol at dekkers@qualityplustech.com.