IFPUG
INTERNATIONAL FUNCTION POINT USERS GROUP
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## Inside...




# ISMA Cinco! Update

*by Terry Vogt, Conference Committee Chair*

IFPUG reaches out to the international community in this year's premier conference event for software measurement professionals in the country with the largest number of Certified Function Point Specialists. ISMA Cinco! will be held in São Paulo, Brazil on September 13-15. São Paulo is an exciting cosmopolitan city that provides many attractions to interest attendees and visitors.

There will be one full day of Workshops on September 13 and two full days of Conference sessions on September 14-15. Speakers from around the world will provide presentations on a wide variety of topics of interest to software measurement and estimation practitioners and IT managers.

For more conference information see the ISMA Cinco! Conference brochure at http://ifpug.org/conferences/2010/2010_ISMA_Promo_Bro.pdf

Here is a brief overview of the presentations:

## Day One – September 14

### *Keynote Speaker: Ricardo Valerdi*

**Heuristics and Biases in Software Cost Estimation**

This presentation will explore heuristics, which are commonly observed shortcuts in decision making, that are used in software cost estimation. It will review common biases that occur and how they can be corrected to improve the accuracy of estimation.

Ricardo Valerdi is a Research Associate at the Massachusetts Institute of Technology. He obtained his Ph.D. from the University of Southern California where he developed the COSYSMO cost model.

Hear Ricardo Valerdi and Tom Cagley talk about process improvement and measurement in the information technology arena in SPaMCAST 84 - Valerdi, Change and Estimation, Outsourcing on www.spamcast.net at http://www.spamcast.libsyn.com/index.php?post_id=610665

### *ISMA Cinco! Conference Tracks*

**There are three presentation tracks at ISMA Cinco! on September 14:**

**Function Point Practitioner** – This track provides practical information to measurement practitioners on the process of counting function points as well as specific examples of function points analysis (FPA) in areas of broad interest to software measurement.

*(continued on next page)*

*(ISMA Cinco! Update, continued from page 1)*

Presentations scheduled include: Use of Function Points in Agile Projects; FP Sizing of SOA Applications Made Easy; Using FPA in Mobile Government Projects; Sizing a Batch Job Application with FPA; Applying a Sampling Approach & Monte Carlo Simulation in an Application FP Count.

**Estimation** – Presentations on this track provide examples and information on topics focusing on how to use function points to estimate effort, schedule, cost and other aspects of supporting software project and program management.

Presentations scheduled include: An Estimation Improvement Program in a Software Organization; Function Point Analysis – A Cornerstone to Estimating; The Truth About Software Development, A Method to Assess the Efficiency of Software Projects; The Significance of IFPUG Base Functionality Types in Effort Estimation.

**Management** – This track contains presentations covering the use of functional sizing software measurement to support business decision making, organizational change, proposal and contract specification and executive management in general.

Presentations scheduled include: Measurement – A Strategic Tool for Cost Planning and Auditing; Doing Business with Function Points – Function Point-based Business Models; The IN SLTI 042008 and Results Assessment; New Techniques for Prioritising Which Software Projects are Funded; Achieving Excellence in IT Governance.

## *Featured Speaker: Carol Dekkers*

**Featured Presentation: To Be(nchmark) or not to Be(nchmark) - Shakespeare's Views on Benchmarking**

While Shakespeare is often cited for his words of wisdom as applied to law, finance, business and other industries, the software measurement and benchmarking industry has not followed suit in applying his many excellent quotations to this mundane topic. This presentation features a creative perspective on the essentials of successful software benchmarking using the words of the Bard of Avon.

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Ms. Dekkers is president of Quality Plus Technologies and a key advisor to senior management in establishing successful software measurement and function point initiatives. She is an international consultant, author, and presenter, and a former IFPUG President.

## Day Two – September 15

### *Featured Speaker: Tom Cagley*

**Function Points: Past, Present and Future**

The practice of IFPUG Function Points has expanded over nearly the entire world. This speech will explore the cutting edge of functional sizing (real new environments), the opportunities of globalization and the potential for the practice of function point counting to change radically in the future.

Mr. Cagley is Vice President of Consulting for David Consulting Group. He is an authority in guiding organizations through the process of integrating software measurement with model-based assessments. Mr. Cagley is a former IFPUG President. Tom blogs about software development and management topics at www.tcagley.wordpress.com and edits podcasts of essays and interviews titled "Software Process and Measurement Cast" (www.spamcast.net).

### *ISMA Cinco! Conference Tracks*

**There are three presentation tracks at ISMA Cinco! on September 15:**

**Function Point Application** – This track provides presentations that describe approaches taken to apply function points to a variety of purposes including standard sizing and reporting as well as special uses such as process improvement, alternatives analysis, and others.

Presentations scheduled include: Function Points as Product Units; Function Points and Agile – Hand in Hand; Definition of a Measurement Guide for Data Warehouse Projects; Bullet Proofing FPA – A Team's Journey; Continuous Improvement – FPA as a Quality Tool.

**Metrics** – Presentations are provided in this track cover the definition, collection, storage, analysis, communication and usage of measurement information based on function points to support, inform, alert and guide teams, organizations and processes.

Presentations scheduled include: Software Measurement – A Critical View; Statistical Process Control in Projects; Transitioning to Function Points with PSM; How to Measure: That is The Question; A Measurement Repository Fit for Statistical Control of Software Processes.

**Issues & Ideas** – This track offers presentations on extended and innovative approaches to measurement, raises issues related to measurement practices and usage, and offers some potential solutions to the problems related to software measurement.

Presentations scheduled include: Improve FPA Yield with 6 Sigma; Measurement in Perspective – Effective Measurement Design from User Perspectives; The Thorin Simulation; Standardization Issues in Software Measurement and Estimation; Innovative Approach to FP Automation.

**The IFPUG Annual Membership Meeting** will be held at the close of presentations on September 15.

# Communications & Marketing Committee

***by Linda Hughes, Chair***

The IFPUG Communications & Marketing Committee (CMC) has been extremely busy these past few months trying to get the word out about ISMA Cinco! We've been working closely with the Conference Committee to communicate the outstanding agenda they have put together for this year's annual conference, as well as all the logistics around having a conference outside of the U.S. The CMC has collaborated with other organizations, such as PSM and ITMPI, to cross-market each others' events to expand the reach of the ISMA Conference.

There's so much going on – as you can tell by all the e-blasts you get from us. We know it seems like there's a new message every few days, but we're sending out very important information, so make sure to read your IFPUG e-mails.

# Counting Practices Committee

***by Janet Russac, Committee Member***

The Counting Practices Committee's (CPC) mission is twofold:

- Maintain the currency of the Function Point Counting Practices Manual
- Continue to serve as a forum for resolving issues in the counting methodology.

Effective January 1, 2010, CPM 4.3 replaced 4.2 as the current IFPUG method. CPM 4.3 may be purchased directly from IFPUG. It is also available to current IFPUG members as a free download on the member side of the IFPUG website. A DVD of the changes from 4.2 to 4.3 is forthcoming. There are also two Quick Reference Cards based on CPM 4.3 available for download from the IFPUG web site under "CPM Downloads":

- Function Point Quick Reference Card
- GSC Quick Reference Card.

The CPC recently completed and published the white paper "Practical Guidelines for Documenting the Function Point Count." It is available for download under "White Papers" from the members-only side of the IFPUG web site.

Additional white papers currently in progress are:

- Control Information
- Shared Data
- Security.

The CPC is also in the process of updating Case Study 1 to align with CPM 4.3.1.

Suggestions or ideas may be sent to the CPC by e-mail to cpc@ifpug.org.

# Management & Reporting Committee

*by Heidi Malkiewicz, Chair*

The Management & Reporting Committee (MRC) members have been pursuing creating another IT measurement book. In 2002, IFPUG and the MRC published a book titled, "IT Measurement: Practical Advice from the Experts" as part of the Addison Wesley Information Technology Series. The book is a collection of articles on IT measurement written by experts in various disciplines from across the globe.

We are making plans to publish another similar volume. Topics being considered for the upcoming publication include:

- Quantitative Project Management
- Estimating
- Defect Reduction
- Process Improvement
- Value Stream Mapping
- Measuring Project ROI
- Varied usage of Function Points
- Measurement in a rational market
- Measurement as a tool in accountability
- Metrics for the CIO
- Measurements stories from the trenches
- Measurement and Attention
- Measurement and Motivation
- Competing on Analytics

The MRC is assessing interest within the publishing community regarding this endeavor.

# New Environments Committee

*by Steve Woodward, Chair*

## Another busy year for the New Environments Committee (NEC)!

We started interest group communities in the subjects of: agile, banking/insurance, UML, SOA and telecommunication. Over 160 IFPUG members are now registered in these communities.

To join, it's a simple email to the group you are interested in:
agile@ifpug.org,
finance-insurance@ifpug.org,
soa@ifpug.org,
uml@ifpug.org or
telecomm@ifpug.org.

The interest groups are being lead by industry NEC committee members from GEICO, NASCO, HP, AT&T, Accenture and QinetiQ-North America. Some presentations and discussions within the communities are already providing a level of comfort and consistency within the groups.

In addition, I have been further fostering the TM (Telecommunication Management) Forum / IFPUG relationship to inform and encourage cross-participation between these forums.

Major hints and discussion points from the interest group communities:

1) In SOA and cloud computing, development of services are expensive (two to three times higher than traditional business functions), therefore you should categorize service functionality separately from business functions (could be middleware or layer) to improve estimation accuracy
2) Some organizations using agile development methods have already quantified improvements of 25 percent and more from traditional development methodologies
3) In cloud and service-oriented architectures, the full capabilities of the services are, or will be, hidden and therefore calling the service will "leave the middleware in a consistent state"
4) IFPUG uniqueness tests are valuable, improving communication between technical and business teams
   a. Unique DETS and/or edit logic – then it's a unique "thing" (EP)
   b. Different values – does NOT make it a unique "thing"

## This issue of *MetricViews'* spotlight is on SOA.

*by Deb Maschino, NEC Committee Member*

The NEC Service Oriented Architecture (SOA) Interest Group has met several times in 2010. The purpose of this interest group is to provide networking opportunities for sharing, leveraging, understanding and communicating the application of IFPUG Function Points in a SOA environment. The interest group has been reviewing presentations and papers on the use of function points as a functional size measure for project estimating, productivity analysis and application portfolio sizing. The goal is to provide guidelines and/or white papers to establish a common direction for IFPUG members in the application of function points for multi-tiered, service-oriented applications.

In addition to the interest groups, we continue to work on papers such as, "Application Boundaries for Telecommunication using TM Forum Frameworks," and "Accounting for Reuse."

The NEC looks forward to the year ahead with IFPUG industry members to help guide and prioritize our focus for 2011.

# Function Point Lite™ – Is It a Statistically Valid Method of Counting?

*By David Herron*


## Abstract

*The collecting and analyzing of data for purposes of measuring performance and managing software deliverables is fast becoming a common practice within the software development community. One of the critical pieces of data is size. Size can be defined as software work products (number of programs, lines of code, objects, etc) or it can be defined relative to the functionality delivered to the customer (input transactions, reports, inquiries). A proper sizing mechanism is necessary to be able to truly measure performance productivity. Level of effort or cost alone does not equate to productivity. Productivity is calculated as a cost (or effort) per a unit of work (size).*

*Function Point Analysis (FPA) is an industry accepted sizing technique developed by IBM in the mid-seventies. It has been adopted worldwide and is supported by a user group, The International Function Point Users Group (IFPUG), which maintains the defined FPA methodology, supports the current counting practices and certifies professional counters. However, not everyone has adopted FPA as their sizing technique of choice. Past criticisms of the methodology have included concerns that it takes too long, it requires too much detail, it is too difficult to implement and it costs too much. A recent study has shown that an adaptation of the FPA methodology – FP Lite™ – is a reasonable alternative to the detailed FPA method and in fact addresses many of the criticisms that have been levied in the past. This paper introduces the FP Lite™ methodology, the results of two studies designed to statistically understand the accuracy of the FP Lite™ methodology in contrast to the detailed FPA method.*


## The Need for Sizing

Amongst mature organizations there is seldom a debate around the fact that sizing is an important aspect of managing and controlling project delivery. At a minimum, we must size our work product in order to effectively estimate the level of effort needed to build the required deliverable. The importance of having an accurate (or accurate enough) sizing mechanism has a direct impact on the efficiency of how we utilize our resources and how we manage our budgets.

*(continued on next page)*

*(Function Point Lite™, continued from page 8)*

Furthermore, properly sizing the work product allows us to reasonably manage our customer's expectations with regard to clarifying requirements and managing scope.

One of the most effective sizing techniques available is Function Point Analysis (FPA). FPA measures the functionality being designed, developed and delivered to the customer. It serves the dual role of being user friendly (sizings are expressed in terms the customer can understand) and providing value to the developer as a consistent and quantitative measure of work product size. So why isn't everyone using it?

## Criticisms with Function Point Analysis

Since its inception there have been a number of reasonable and rational complaints or criticisms regarding the use of FPA methodology. We often hear such comments as:

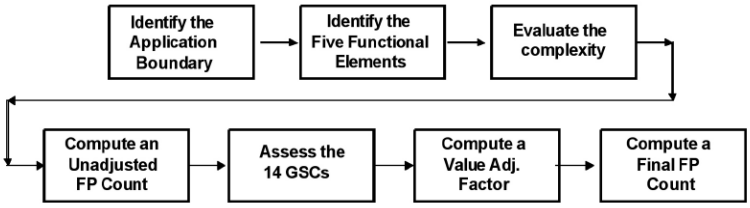
- FPA methodology terms are confusing
- It takes too long to learn; we need to hire an expert
- The methodology needs too much detailed data that is simply not available
- FP does not reflect the complexity of the application
- It takes too much time.

If these are the core excuses for not sizing (using FPA), then by eliminating these concerns there should be a wider acceptance and use of the FPA methodology.

[One important note about the "it takes too much time" comment. This is either a statement based on a total lack of understanding on the importance of accurately sizing and estimating a deliverable, or it is based on the concern that time is of the essence and the ability to produce an accurate and acceptable size measure needs to be quicker, cheaper and better than the current FPA approach. The question really should be, how much time should you invest in the sizing and estimating of a product deliverable? Answer – if you could significantly reduce the amount of time spent managing schedule and cost overruns and improve your credibility with your users – would an investment of less than 1% of the total project effort be a reasonable investment of your time?]

## An Alternative Approach

The current FPA approach involves a series of steps that lead you through a detailed analysis of the various functional elements, their applied weights and an assessment of the general systems characteristics that influence the functionality being delivered. The process flow looks like this:

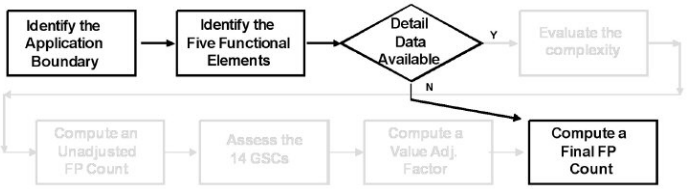



Identifying the five functional elements (inputs - EI, outputs - EO, inquiries - EQ, data stores - ILF and interfaces - EIF) is beneficial in that it relates directly to the functionality the user has requested and expects to receive. The subsequent step to evaluate the complexity of each of these functional elements is dependent upon having the necessary detailed system documentation available and then performing a series of calculations to derive a weighted value for each of the elements. This is the part of the FPA process that typically is the most time consuming.

Since this "complexity evaluation" is the source for some of the criticisms about FPAs then it is a logical leap to consider – what is the impact on the accuracy of our size estimate if, when performing a FP count, we simply assume everything is of average complexity? If, in fact, a 'Lite' version of the FP methodology could be proven to be statistically accurate enough then we might suggest one could use this FP Lite™ method when:

- You don't have enough detail data to determine the complexity
- You don't have the time to perform a full count
- You don't have the skill (or motivation) to perform a full count.

A proposed FP Lite™ process flow would be as follows.




If detailed system documentation is not available, then we simply assign average complexity values for all identified elements. In order to understand the feasibility of promoting a technique such as FP Lite™ we conducted an analytical study to determine the impact on the accuracy of the resulting size.

## FP Lite™ Study

The intent of the study was to determine –

- What is the statistical variability between a detailed function point count (FPA) and a FP Lite™ count?
- What is the effort involved for a detailed function point count vs. a FP Lite™ count?

The following table shows the function point value for each of the five functional elements (EI, EO, EQ, ILF, EIF) depending upon their low, average or high weighting. For example, in Table 1, an Input (EI) identi-

*(continued on next page)*

*(Function Point Lite™, continued from page 9)*

fied as low complexity has a function point value of three, an average complexity input has an assigned value of four and a high complexity input has a value of six. There is a natural variability that exists within the methodology dependent upon the weightings applied to the various elements.

**Table 1 - PROFILE**

| FP Entities | Low | Var. | Avg. | Var. | High |
|---|---|---|---|---|---|
| EI | 3 | +33% | 4 | -33% | 6 |
| EO | 4 | +25% | 5 | -28% | 7 |
| EQ | 3 | +33% | 4 | -33% | 6 |
| ILF | 7 | +42% | 10 | -33% | 15 |
| EIF | 5 | +40% | 7 | -30% | 10 |

With this in mind, it stands to reason that a detailed function point count that has a majority of low complexity entities will result in a function point size that would be less than the function point size derived by using the FP Lite™ method which assumes everything to be average. Conversely, the FP Lite™ method will understate a detailed function point count that has a majority of high complexity entities. However, are function point counts typically weighted towards one extreme or the other?

By looking at a random sampling of projects we were able to determine the resulting level of accuracy when applying the FP Lite™ method in contrast to the detailed method of counting.

Our approach consisted of the following steps:
- Collected data from two separate sources (identified as Group 1 and Group 2)
- Counts were performed by experienced function point counters all counting consistently but independently
- Counts were randomly selected from a larger group of counts.

Projects were all counted independently by a coordinated group of Certified Function Point Specialist counters. Counts were performed for a client and were subject to several QA reviews to ensure proper accounting for all functionality.

## Group 1 Projects

**Group 1 Profile**
Total number of projects - 30 Enhancement projects from (30) different applications

| FP Size Range | # of Projects |
|---|---|
| 0 - 50 fps | 11 |
| 51-150 fps | 10 |
| Over 150 fps | 9 |
| Total | 30 |

| Distribution of Size | |
|---|---|
| Smallest | 3 |
| Largest | 1,916 |
| Average Size | 198.47 |

| Distribution of FP Entities (% to total) | |
|---|---|
| EI | 37% |
| EO | 20% |
| EQ | 16% |
| ILF | 24% |
| EIF | 3% |
| | 100% |

| Projects by Platform | |
|---|---|
| Client Server | 14 |
| Web | 6 |
| Mainframe | 9 |
| PC | 1 |

The above profile is a fairly typical representation of enhancement projects for a commercial-based IT shop. An average size of 198 function points for an enhancement project is in line with our previous counting experiences.

**Group I Statistics**
Assumption: Statistics based on adjusted function points.

Total of all Projects
Detail Count 5954 FPs
FP Lite™ 5471 FPs

Variance* at the Project Level

| | Extreme | | Median | |
|---|---|---|---|---|
| Range | Low | High | Low | High |
| All Projects | -23.69% | 32.16% | -8.90% | 12.90% |
| 0 - 50 fps | -21.42% | 32.16% | -8.62% | 26.07% |
| 51-150 fps | -23.69% | 19.72% | -10.22% | 12.23% |
| Over 150 fps | -22.77% | 4.18% | -8.91% | 3.65% |

*Variance expresses the performance of FP Lite™ relative to the actual (detail) count.

The total number of function points counted using the two counting techniques (detailed and FP Lite™) had an acceptable variance (8%). But we are less concerned about the total project portfolio count and instead we want to focus on the results at the project level.

The Extreme Low and High values represent the low and high variations among the size groupings. For example, across all projects the greatest extent to which the FP Lite™ method understated the size was -23.69%. The Median Low and High represents the median values within each of the size groupings.

What we observed with the Group 1 projects (median values) was that projects that were less than 50 function points had the greatest variance while those projects greater than 150 function points had the least amount of variance (-8.9% to 3.65%).

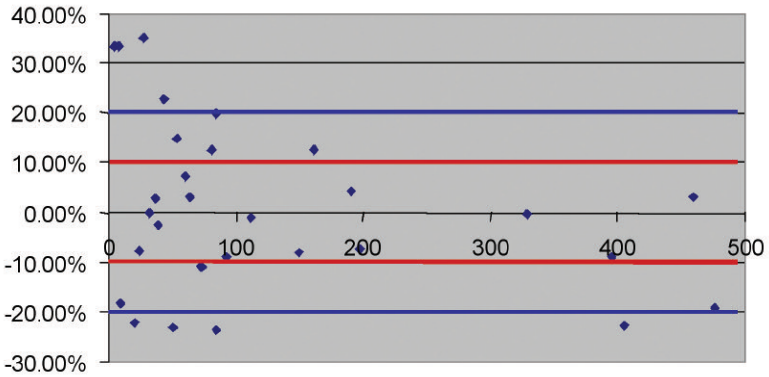
*(continued on next page)*

*(Function Point Lite™, continued from page 10)*

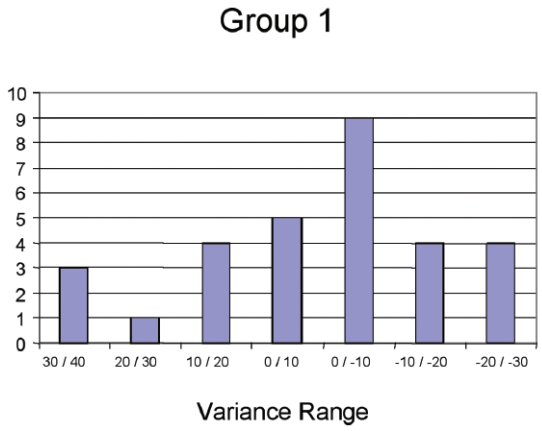
**Group 1 Distribution**

The graphical display below shows the distribution of the Group 1 projects. The Y axis represents the percent variance and the X axis represents the project size. Note that one project of 1916 function points is not represented in the graph but it is in the statistics.

We observed that 47% of the projects had a less than +/- 10% variance using the FP Lite™ in contrast to the detailed counts. Seventy-four percent (74%) of the projects were less than +/- 20% and 26% were greater than +/- 20%. To carry this forward we could say that nearly 75% of the time, the FP Lite™ method resulted in counts that were +/- 20% of the detailed function point count.




The graphical display below shows the distribution of projects within a variance range. The Group 1 projects followed a (relatively) normal distribution centered on the 0 / -10% range.




**Group 1 Summary**

The Group 1 results were looked upon favorably from several perspectives:

- o The mean variance at the project level, particularly on projects over 150 function points, is very favorable
- o The distribution of projects resulting in a majority of projects with a variation no greater than +/- 20% is also very favorable
- o The final highlight of the Group 1 data was the resulting normal distribution centered on the 0/-10% range.

The next step in our study was to expand the sample size and select an additional set of projects from a different source and with different resources performing the counts. We identified this second group of projects as Group 2.

## Group 2 Projects

**Group 2 Profile**

Total number of projects - 95 Enhancement projects from (70) different applications

| FP Size Range | # of Projects | Distribution of Size | |
|---|---|---|---|
| 0 - 50 fps | 0 | Smallest | 52 |
| 51-150 fps | 44 | Largest | 1,572 |
| Over 150 fps | 51 | Average Size | 207.70 |
| Total | 95 | | |

| Distribution of FP Entities | | Projects by Platform | |
|---|---|---|---|
| EI | 32% | | |
| EO | 27% | Client Server | 61 |
| EQ | 19% | Web | 25 |
| ILF | 17% | Mainframe | 9 |
| EIF | 5% | PC | 0 |
| | 100% | | |

Group 2 projects were also typical in their representation of enhancement projects. One interesting observation of Group 2 projects to Group 1 projects is the difference in the distribution of FP entities. Group 1 ILFs are significantly greater than Group 2. We made no conclusions based on this observation, however some additional analysis may be advised to learn of any possible impact this type of distribution may have on the variability between the two methods of counting.

Assumption: Statistics based on adjusted function points.

| Total of all Projects | |
|---|---|
| Detail Count | 19733 |
| FP Lite™ | 17738 |

*(continued on next page)*

*(Function Point Lite™, continued from page 11)*

Variance* at the Project Level

| | Extreme Low | Median Range Low | Median High | Extreme High |
|---|---|---|---|---|
| All Projects | -33.04% | | 25.81% | -16.21% | 11.32% |
| 0 - 50 fps | -------- | | ------ | | |
| 51-150 fps | -33.04% | | 18.44% | -14.17% | 11.32% |
| Over 150 fps | -32.82% | | 25.81% | -16.73% | 10.41% |

*Variance expresses the performance of FP Lite™ relative to the actual (detail) count.

The total number of function points counted using the two counting techniques had a greater variance (10%); however, still within an acceptable range.

As in Group 1 projects, the Extreme low and high values represent the low and high variations among the size groupings.

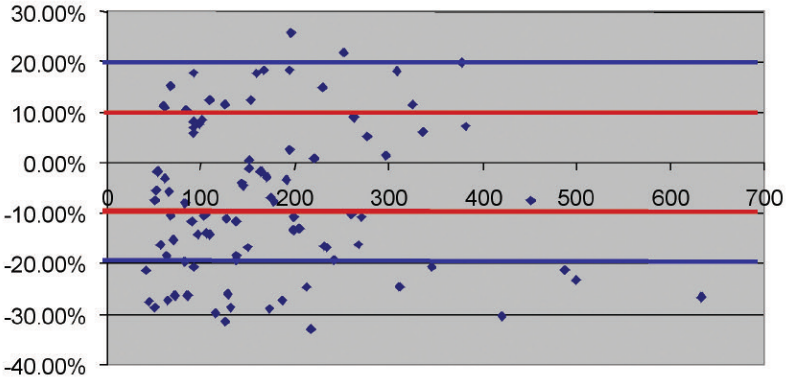
The Median represents the median value within the size groupings. Group 2 did not have any small (< 50 FPs) projects. The variability in the other two size groupings was greater with the Group 2 projects than what we observed in Group 1. Furthermore, we did not observe a narrowing of the variance range as the project size increased.

**Group 2 Distribution**

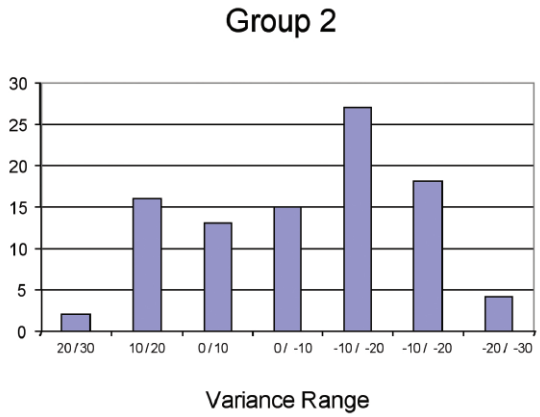
The graphic display below shows the distribution of the Group 2 projects. The Y axis represents the percent variance and the X axis represents the project size. Note that two of the larger projects (865, 1572) are not represented in the graph but they are part of the statistics.

We observed that 30% of the projects had a less than +/- 10% variance using the FP Lite™ in contrast to the detailed counts. Seventy-five percent (75%) of the projects were less than +/- 20%, and 25% were greater than +/- 20%.

These observations are similar to what we saw with the Group 1 projects.




The graphic display below shows the distribution of projects within a variance range. The Group 1 projects followed a relatively normal distribution centered on the 0 / -10% range. The Group 2 distribution can not be considered a normal distribution. Additional analysis of the data is suggested to determine if a more normal distribution might be realized within sub-groups of data such as size.




**Group 2 Summary**

The Group 2 data points show some interesting results:

- o This larger data group maintains some consistency with the Group 1 findings
- o The mean variance at the project level continues to look encouraging
- o The distribution of projects – 75% are within +/- 20% of the detailed count – is favorable.

## General Observations

We concluded the study with the following observations:

- o With FP Lite™ the variance tends to decrease as the size of the project increases
- o Size counts under 50 FPs may have a higher variance. In part, this could be due to the relative nature of small numbers and the influence of any one variable
- o A high frequency of changes to certain functional elements may have an impact on variability; e.g. ILFs
- o 70 +% of the FP Lite™ size estimates were within +/- 20% of the detail counts
- o GSCs were not statistically significant relative to the results of the final count (not documented in this paper).

## Counting Productivity

The second question we wanted to answer was whether or not the FP Lite™ method of counting was more productive (quicker) than the detailed counting method.

To answer this question we surveyed nine Certified Function Point Specialists. The data points noted below reflect their notional view of how much time it takes to count various sized projects.

*(continued on next page)*

*(Function Point Lite™, continued from page 12)*

| Size | Effort (hrs.) on average | | |
|---|---|---|---|
| | Detail FP | FP Lite™ | Productivity |
| <50 | 2.5 | 2.0 | 20.0% |
| 50 – 150 | 4.3 | 3.5 | 18.6% |
| >150 < 300 | 8.8 | 5.5 | 37.6% |
| 300 – 650 | 13.9 | 9.6 | 30.9% |
| >650 <1000 | 20.8 | 14.3 | 31.3% |

For projects greater than 150 function points, a reasonable time savings can be achieved. Therefore, we suggest using the FP Lite™ approach may be more productive.

## Conclusions

We have observed the FP Lite™ method can, in fact, address the criticisms of FPA sizing and hopefully remove some of the barriers for sizing projects and portfolios. FP Lite™ does not require the level of detail one would need to do a detailed FPA count. We also observed it can be performed in a shorter timeframe.

The Group 2 results demonstrate that further data collection and analysis should be considered. Additional statistical models may help to further support the validity and use of FP Lite™.

We recommend FP Lite™ be adopted by any organization that has realized the importance of, and the need for, a proper sizing methodology. For those organizations already using FPA we hope you will see FP Lite™ as a statistically acceptable method for conducting early life cycle counts. For any organization that has avoided using function points, we present FP Lite™ as an opportunity to start gaining better control and management of your projects.

# The Cost of Speed

*by Pam Morris, CEO, Total Metrics*

Many organisations are seeking to optimise their processes to deliver more functionality, faster AND at a lower cost. However, the objectives of faster delivery and lower costs may, in fact, be in contention. Although the IT department responds to change requests quickly, overall it delivers less software annually and what it delivers is at a significantly higher cost per unit of functionality. Since quantitative measurement of IT output (function points delivered) is frequently not monitored, the business sponsors are often unaware of the significant decrease in IT cost effectiveness resulting from their decision to implement these short sharp projects. This article looks at an Australian organisation who, after reviewing the costs to deliver functionality of their small projects, has weighed the cost up against the business value of 'faster time to market' and revised their delivery strategy to optimise both their cost effectiveness and speed of delivery.

Over the last two years, the organisation's business sponsors had requested their internal IT department be more responsive to external business needs, and be able to deliver immediate updates to their software within three months of a change request being logged. These small updates were typically in the range of 10-40 function points. (Where 30 fps of functional change would be equivalent to adding a new field to Customer information, changing the maintenance and reporting transactions on customer details to include the new field.) The business was pleased with the improved turn-around time, but the IT project teams noticed these new micro projects consumed nearly all of their resources, such that the larger more strategic projects were being held back in the project implementation schedule.

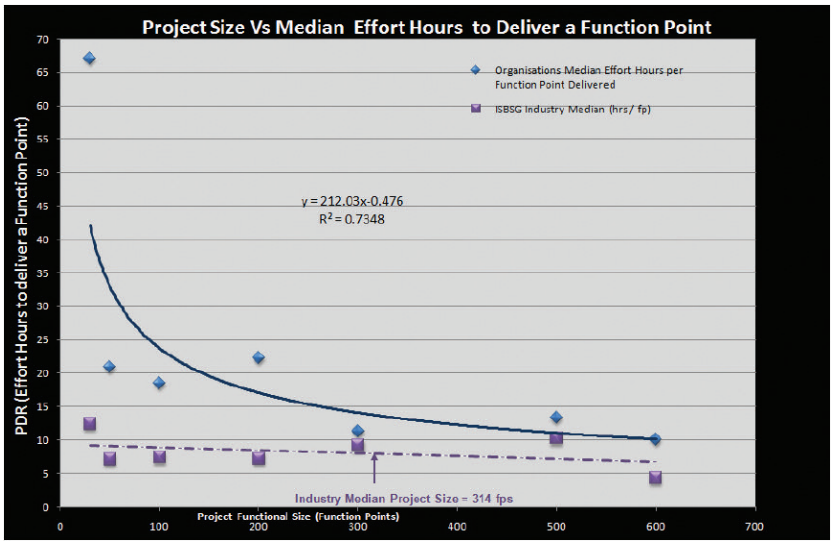
In order to assess the true costs of this new approach of prioritising projects, the organisation measured the output productivity from 50 enhancement projects over the past four years to evaluate the productivity and cost per function point of delivering functionality bundled into a larger project (>250 fps), compared to delivering functionality as a small isolated project (<50 fps). Their results are displayed in the graphs below where they are compared to the industry data for the same development platform from the International Software Benchmarking Standards Group (ISBSG) (www.ISBSG.org). The ISBSG reports productivity as PDR (Project Delivery Rate) in hours / function point delivered. This is an inverse relationship to what is usually considered to be 'productivity' which is output produced divided by the input resources. Therefore, when interpreting the graphical data below you need to remember the lower the PDR, the higher the productivity. i.e. the more hours to deliver a function point of project functionality, the less productive the project.

**Figure 1: Projects – Project Size versus Hours per FP to Develop**

The size of the 50 projects analysed, varied 50-fold over the four-year period measured. The organisation's data showed a strong correlation between PDR and project size, such that as project size decreases, the PDR increases exponentially (R2=0.74). i.e. their project productivity and cost effectiveness decreases exponentially as project size decreases. Their smaller projects were costing five times more to deliver a function point than it would have cost if the changes were implemented as part of a larger project. However, they found that once the project size reached an optimum of around 300 fps (i.e. close to the industry median project size of 314 fps), the PDRs achieved were consistently within industry median values (10 to 12 hours per fp).

It may be noted that this inverse relationship between project size and PDR is not a phenomena exhibited in the industry data, which shows only slight productivity improvement as projects move from 30 fps to 300 fps.

The organisation had been implementing process improvement initiatives and benchmarking their productivity gains, for the past four years. They had achieved significant improvements up until when they decided to implement smaller projects. Over the last two years, 75% of their projects have been less than 200 fps. They found as projects decreased in size, the variance of their PDRs also increased (up to +500% for small projects <50 fps compared to +20% for projects >220 fps). (See Figure 2) This unpredictability had resulted in widely differing values for their actual

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*(The Cost of Speed, continued from page 14)*

costs to their planned costs. Previously, using functional size as input to their project estimates, they had been able to accurately estimate the costs of larger projects within + 15%, but their budget estimates for smaller projects were highly unreliable.

The wide variances in productivity exhibited by the small projects were also masking any improvements that the project teams have been able to make to the development process.

The analysis of the organisation's data indicated there was something unique about their development process which was negatively impacting the productivity of small projects which was not found in comparable industry data. Further investigation found that the rigor and resource overhead on their development processes had not been customised for their micro projects, which were required to produce the same detail of documentation and undergo the same rigorous system and regression testing as projects that were 100 times their size.

The organisation has since worked with the business areas to review how projects are prioritised and grouped into projects, and their development processes have been customised to be more appropriate for small projects so as to optimise their cost effectiveness.

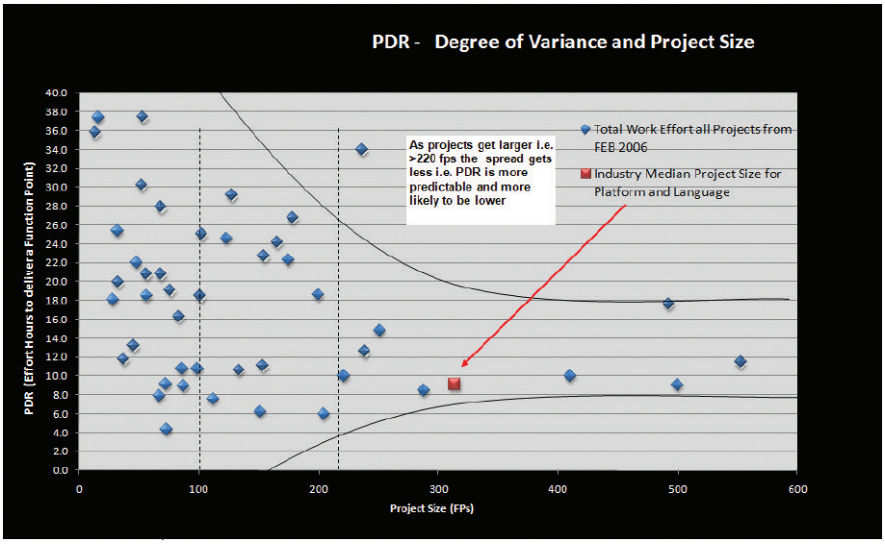


**Figure 2: Projects – Productivity Variance decreases as Project Size ~ 220 fps**

In summary, whilst the project teams had been expressing an opinion for the last two years that the new way of working was inefficient, it was only the cold hard facts – that it was 500% more costly – that spurred IT management and the business to review their way of working.

The organisation has now been able to satisfy both objectives of faster turn-around time of change requests, and more cost effective software delivery, but they were only able to target the problem by monitoring their project productivity. They did this by measuring the functional size of every project and implementing a formal process to track development effort. This highlights that the key to making informed decisions is to have objective data, i.e. "without measurement you are only another person with an opinion." Does your organisation know what it is costing them to develop a function point, and are you more effective or less cost effective than industry? Maybe you need to think about implementing measurement and analysis processes within your IT area to help contain your growing IT costs and communicate effectively with the Business sponsors?

About the author:

*Pam Morris is the CEO of Total Metrics, an Australian-based organization that uses software measurement to bridge the gap between IT and the business. In 2006, Pam was awarded the Australian ITP Lifetime Achievement Award for her services to the IT Industry. In 2007, she was elected Vice President of the International Software Benchmarking Standards Group (ISBSG) and the co-author of their benchmarking standard. She is the ISBSG liaison for the Australian metrics association, QESP. She represents Standards Australia as the international project editor of the ISO standard 14143-1 and 2 for Functional Size Measurement. She was the international convener of ISO/IEC/WG12 group developing FSM standards from 1997 to 2004 and plays an active role internationally in the development of measurement standards. Pam was a member of the International Function Point User Group's (IFPUG) Counting Practices Committee from 1993 to 2000 and continues to be a reviewer of IFPUG documents. She is a member of the COSMIC-FFP Core Group and assisted in the development of the COSMIC-FFP FSM method. She has been an IFPUG Certified Function Point Specialist (CFPS) since 1994, and a COSMIC Certified Practitioner and a Certified Software Measurement Specialist (CSMS Level 3) since 2006. In 2007, Pam was invited to be an international expert partner of the Chinese Software Benchmarking Standards Group. She is the principal designer of the Total Metrics' internationally renowned Function Point counting tool – SCOPE, and a Certified Investment Management Facilitator.*

*Pam is a regular guest speaker on the topic of software metrics at numerous international conferences in the USA, China, Japan, India, South Korea, New Zealand, Germany, South Africa, Spain, Switzerland, Sweden, Italy and the UK.*

*Other articles by this author:*

- *Case Study of a Successful Measurement Program - http://www.totalmetrics.com/total-metrics-articles/Software-Measurement-Case-Study.pdf*
- *Metrics Based Project Governance http://www.totalmetrics.com/function-point-resources/downloads/Software-Measurement-Project-Governance.pdf*
- *Uses and Benefits of Function Points - http://www.totalmetrics.com/total-metrics-articles/uses-and-benefits-of-function-point-analysis*
- *Resources for Implementing a Metrics Program - http://www.totalmetrics.com/function-point-resources/downloads/Infrastructure-Resources-for-metrics.pdf*

# Functional Analysis in 2010: Applicable or Antiquated?

*by Steven Woodward, Woodward Systems, Inc. and IFPUG New Environments Committee Chair*

There are a large number of executives and software engineers who have either never heard of function points, or believe function points are antiquated and no longer relevant in today's agile, business-focused, data-centric world. This article will briefly highlight some major industry directions, frameworks and how functional analysis provides a valuable, high return-on-investment model when used in a meaningful and practical way.

## Today's World has Changed

The software world has changed dramatically in the past six years. Major considerations now include the Web, smart phones, smart devices, social networking, multiple channels, service-oriented architectures and cloud computing. Key questions and decisions are often non-traditional, therefore functional analysis, when used as a flexible framework, provides the maximum value and coverage. Questions such as, how much functionality is written by the service provider and what is fair value to pay per service per megabyte; or, how much functionality requires testing after integration of a package, are the more common questions for 2010.

## Importance of Context and Perspectives

Let's get a perspective for general measurement.

Meters, I think we agree, are a good unit of measure. There is a known conversion factor to other measures such as the British system, where one meter equals approximately 39 inches.

If I say to you, "something is 125 meters," this measurement information is useless without context and perspective. Naturally, additional questions are asked, such as: "of what?" "why do you want to know?" or, "how will you use this information?" The 125 meters is an important starting point; however, the questions and discussions that follow are where the real value is obtained, providing context and perspective from which decisions can be made.

Any good measure uses this same foundation: grams, cups, litres, miles, volts, etc. Making the distinction between one cup of milk and one cup of nitro-glycerine is very important! The measurement is therefore not the end, it's actually the beginning!

Similarly, function point analysis requires questions such as "of what?" and "why?"

Is it the amount of functionality tested? The amount of developed middleware functionality? The amount of functionality offered in a cloud service? The amount of functionality manually performed? Will you generate an estimate with this information? What is included in the estimate? Is benchmarking of interest? Will you use any tools? Do you need to calibrate for your tools?

Function Points are a functionality measure and analysis technique that can be applied as a framework to quantify and improve communication, enabling better decisions.

## Functional Analysis Framework

The IFPUG functional sizing method is a proven one, and this is reflected in the many other frameworks that use similar foundations. IFPUG and TM (Telecommunication Management) Forum have a collaborative agreement. The IFPUG method and TM Forum framework align very well, and I will highlight the general foundation of each in the sections that follow. Many other frameworks also have similar approaches and foundations.

***Application boundaries:*** are established from a logical business perspective, but can be more physical where specific functional sizing questions exist for components, middleware or subsystems. These more physical boundaries correspond with TM Forum's TAM (Telecommunication Application Map) applications and potentially lower-level middleware and other service-related capabilities. Logical business application boundaries using the IFPUG framework usually closely align with TM Forum eTOM (enhanced Telecommunication Operations Map) level 2 business processes.

***Data:*** the business recognizes the data is of two categories: data maintained (ILF), and data referenced (EIF). These are logical rather than physical; therefore closely resembling TM Forum SID (Shared Information and Data Model) ABEs (Aggregate Business Entities) primary (updatable), and secondary (referenced).

***Transactions:*** functional analysis evaluates unique elementary processes crossing the application boundary, and is the "smallest unit of activity meaningful to the business that leaves the application in a consistent state." Lower level (level 4 and level 5) process flows in the eTOM are unique end-to-end business processes, but can also reflect automated functionality.

The main message is that the core foundation is the same across many software frameworks, modeling and benchmarking communities. Clearly identifying applications, middleware/service boundaries, data and processes are key for business and software providers, to communicate, clarify and stabilize requirements to maximize ROI from software expenditures.

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*(Functional Analysis in 2010, continued from page 16)*

## Leveraging and Cross-Mapping Frameworks

By cross-leveraging and mapping these frameworks, data collection is optimized, comparisons are more consistent and the overall value from analysis can be leveraged in more diverse, but pertinent ways, for 2010. This also enables better coupling of software and business benchmarking, providing dramatically more comprehensive information, supporting improved decision making.

Woodward Systems and Casewise Systems (business process and enterprise architecture modeling tool) have already added function point objects into several business process models within the Casewise tool offerings. Sharing of information between the IFPUG method and other business and enterprise modeling frameworks is easily accomplished, largely eliminating redundant data capture.

## Innovative Uses in 2010 and How Functional Analysis Provides Value

**1) Cloud Computing Strategy and Planning**

Organizations embracing the cloud or considering creating a "private cloud" are at high risk without a framework to foster open communication and discussion around the service functional requirements.

Portfolio management, cataloguing of applications, data, services and functionality enables prioritization, while evaluating the best "cloud fit" with the risks and opportunities highlighted maximizing the return-on-investment.

Functional analysis provides a solid framework to discuss these critical aspects for organizations considering cloud computing opportunities.

**2) Enterprise Architecture Rationalization and Process Optimization**

Organizations continue to struggle with communication between the IT and the business sides. Several frameworks and models exist to clarify roles, responsibilities and application functionality (BPM, TM Forum, TOGAF, ITIL).

Communication between the multitude of stakeholders in today's ever-diverse, agile, innovative and global world is critical for the survival of many organizations.

The information and data collected and communicated using the IFPUG framework is of tremendous advantage, helping to populate the various industry frameworks that are of interest.

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*(Functional Analysis in 2010, continued from page 17)*

## Summary

The foundation of the IFPUG framework is such that it continues to provide a solid approach to clarify, quantify and improve communication so that better decisions can be made by various stakeholders.

The IFPUG method is applicable and is only antiquated when constantly looking backwards instead of forward. Would you drive your car only using your rear-view mirrors?

The world has changed. The acceleration of changes in software will continue for the foreseeable future.

Therefore, innovative, intuitive approaches to leveraging the IFPUG functional analysis method efficiently, with a high return on investment, should be the focus for functional analysts. Remember! '125 meters' is a useless measure without meaningful context!

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*About the author – Steven Woodward, of Woodward Systems Inc. www.woodwardsystems.ca is Chair of the IFPUG New Environments Committee and is IFPUG's liaison with the TM Forum. Involved world-wide in the cloud computing, wireless, ITIL, BPM, QA and agile communities, he is known for his logical and practical approaches for software measurement, estimation and software process frameworks in new and emerging technologies.*



# Vendors World! Vendors World!

## CHARISMATEK Software Metrics

***Victoria, Australia***

CHARISMATEK Software Metrics announces Function Point WORKBENCH 7.0h. Here are a couple of our new features.

WORKBENCH 7.0 includes a powerful module called the Approximator. This delivers an approximation of the Function Point size of an application or project which is stored as a Summary Count.

For many business purposes needing the assessment of the entire application portfolio, the degree of FP size accuracy provided by this approximation technique is all that is required. This approach is obviously much faster and more cost effective than performing detailed counts.

The approximated size is derived from counts of user observable, physical application software artefacts. These can then be stored as summary counts within the WORKBENCH for Portfolio Reporting. And an organization may have hundreds of applications in its portfolio.

WORKBENCH Release 7.0h equips you with all you need to complete this task painlessly. Adobe Forms, supplied with the WORKBENCH, facilitate the electronic collection of data for each application. Data is then electronically stripped from these forms and imported directly into the WORKBENCH.

A user can now open a count directly from a Recent Counts shortcut or from an object embedded in a document or other repository. Can't remember where the count was that you were working on yesterday? No problem. Want to open a count directly from your metrics repository? Just click on the object or icon.

WORKBENCH Publisher reports are now also available in Spanish.

And, of course, Release 7.0h is fully Windows 7 compliant.

## David Consulting Group

***Pennsylvania, USA***

DCG is an international software development lifecycle consulting and training firm helping companies frustrated with development costs, hampered by poor quality or struggling to estimate and achieve on-time delivery. We have successfully helped global organizations and their partners to make timely and effective changes to results and culture. We bring value, expertise and management to projects, enabling them to be on time, with high quality and within budget.

If you could change one thing about your software development, what would it be?

## Q/P Management Group, Inc.

***Massachusetts, USA***

2010 is a milestone year for Q/P Management Group, Inc. Q/P celebrates 20 years in business and our reputation as a leading provider of software measurement, benchmarking, quality and productivity consulting services. We implement the best, most innovative methods, techniques and tools available to assess quality and productivity, implement continuous process improvements and measure the results.

We are proud to announce the latest version of our Software Measurement and Reporting tool, SMRe. SMRe users can now generate software development estimates using historical or industry benchmark data. The SMRe estimating model is based on Q/P's proven software estimating methodology which incorporates an innovative risk assessment to help identify potential project pitfalls. SMRe users continue to have the ability to capture, report and compare project performance against historical or industry benchmark data. Our strategic tool alliance with Charismatek Software Metrics provides a direct link between SMRe and Charismatek's Function Point WORKBENCH™ giving clients licensed to use both products a fully

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*Vendors' World!, continued from page 18*

integrated, seamless measurement and reporting solution. Q/P has added Function Point WORKBENCH to our product offerings.

Visit our website, www.QPMG.com for details about our services and product offerings, including online product demonstrations, or to request an evaluation download.

## Software Measurement Expertise, Inc.

***Florida, USA***

Are you going to be taking the CFPS exam?

Janet Russac, Principal, Software Measurement Expertise, Inc. (SME) is pleased to announce that the Certified Function Point Specialist Examination Guide, co-authored with David Garmus and Royce Edwards, is currently available for pre-order with a publication date of July 15, 2010. The guide is 4.3 compliant and covers every key section of the manual. There are sample questions at the end of each chapter as well as two complete practice exams at the end of the book. In addition, there is a chapter to prepare individuals to take the exam with an emphasis on the automated exam. Janet, David and Royce are all members of IFPUG's Counting Practices Committee and were involved in the writing of CPM 4.3.

SME also offers an exam prep course. This course as well as all other function point courses offered by SME, has been updated to be 4.3 compliant. All courses can be taught on-site or via Web-Ex. All class attendees receive a free copy of the Certified Function Point Specialist Examination Guide!!

New to function points? SME also offers an expert mentoring program via on-site and/or phone and email support. Contact Janet at jrussac@softwaremeasurementexpertise.com for more information or a price quote.

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Established in 1994, Total Metrics is a world thought leader in software measurement and provides metrics related consulting, training and software tools to the international market. Total Metrics' IFPUG certified function point counting experts are the developers of SCOPE Project Sizing Software™, the first product to bring software functional sizing into the domain of project governance and software portfolio asset management.

SCOPE 3.0 is fully multi-lingual in English, Spanish, Portuguese, Korean, Japanese, French, German, Italian, Dutch and Chinese. Project managers use SCOPE to model and quantify their software projects, for input into project estimates, productivity assessments and client / supplier scope negotiations.

SCOPE is the only IFPUG 4.3 compliant measurement software to provide a fully multi-user FP count repository and a quantified audit trail of requirement's changes. It enables tracking of which counter has made what change to the count and when. SCOPE imports all data from your old and current FPW and EXCEL counts, so you can start using SCOPE tomorrow and lose none of your data.

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- IFPUG and COSMIC FSM Methods
- implementing measurement programs
- using metrics for project governance
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- using SCOPE software
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## Congratulations to the newest Certified Software Measurement Specialist (CSMS)!

Luigi Buglione
Engineering IT SpA

Joe Schofield
Sandia National Labs

Correction:
In the Fall 2009 issue of *MetricViews* it was incorrectly reported that Lucio Garcia Escorcio had passed the CFPS exam. We regret the error.

# International Function Point Users Group
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