

# MetricVIEWS



IFPUG.org

A PUBLICATION OF THE INTERNATIONAL FUNCTION POINT USERS GROUP



## FUNCTIONAL MEASUREMENT IN BRAZIL

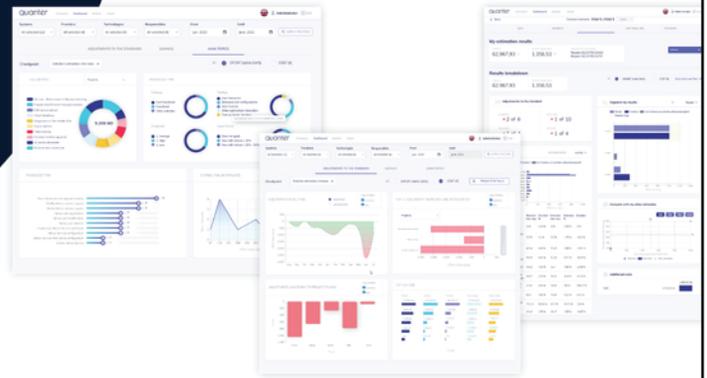
A GLIMPSE INTO THE PAST WITH MAURICIO AGUIAR

APPLICATION DEVELOPMENT AND MAINTENANCE BENCHMARKING

HIGH-EFFICIENCY DEFECT REMOVAL FOR SOFTWARE PROJECTS

# Quanter

www.QUANTER.COM



## Estimation & Vendor Management at your fingertips

- \* Integrated with the world's largest project database  
*Over 65.000 projects*
- \* Market comparison with a single click
- \* Full Jira integration
- \* Use any method in the market  
*IFPUG FPA, IFPUG SFP (Simple Function Points), NESMA, COSMIC, Fast Function Points, UMSp, Quanter elements, Experience, etc*  
**Coming soon** *IFPUG SNAP (Software Non-functional Assessment Process) and more*
- \* Describe any costs in your project to complete an estimation: training, licenses, ...
- \* Set the approval workflow that fit your needs
- \* Any SDLC  
*Waterfall, hybrid, agile, ...*
- \* Full permissions management  
*Users, groups, providers, customers, etc.*
- \* Multilanguage  
*English, Spanish, Italian, Portuguese (Brazilian), etc*
- \* Support with tutorials, videos, articles, and much more



Try it for free now!

<https://QUANTER.COM/sign-up/>

Powered by

leda MC

www.leda-mc.com



Message from the President..... **4**

From the Editor's Desk..... **5**

IFPUG Application Development & Maintenance Benchmarking Certification ..... **6**

Function Measurement in Brazil: A Glimpse into the Past with Mauricio Aguiar ..... **9**

High-Efficiency Defect Removal for Software Projects..... **12**

Quantity Surveying for Software .... **16**

Accuracy in FPA Spreadsheets: Opportunity for FPA Database?.... **18**

Using Flow Metrics ..... **22**

## COMMITTEE REPORTS

- Certification Committee..... **24**
- Functional Sizing Standards Committee ..... **24**
- Partnerships and Events Committee ..... **24**
- Communications and Marketing Committee ..... **25**
- Non-functional Sizing Standards Committee ..... **25**
- International Membership Committee ..... **26**
- Business Applications Committee ..... **26**

### METRICVIEWS EDITORIAL BOARD:

Carol Dekkers | Julián Gómez | Peter Thomas | Tom Cagley | Roberto Meli | Steve Woodward

# MESSAGE FROM THE PRESIDENT

---



*MetricViews* has always been one of my favorite benefits of being an IFPUG member. I hope that everyone enjoys the articles as much as I have. I would like to extend special thanks to Past President Joe Schofield for his excellent leadership as *MetricViews* editor.

As we emerge from the world pandemic, IFPUG continues to provide member services for professional development. We have had a number of Knowledge Café Webinars, and we are excited to announce ISMA19 as a virtual event in June.

IFPUG is developing relationships with other professional organizations to foster cooperation in the worldwide advancement of software measurement and analysis. I recently signed an MOU with the Netherlands Software Metrics Users Association (NESMA) on behalf of IFPUG. We look forward to working with our NESMA colleagues to produce useful information for our members regarding best practices in Functional Software Sizing. Special thanks to Sergio Brigido, our Director of Partnerships and Events, for all his work on this effort.

I would like to thank departing Director Filippo de Carli for his two years of service as an IFPUG board member. The board has filled the vacancy in accord with our bylaws and has elected Mr. Daniel French to serve the remainder of Mr. de Carli's term of office. We welcome Dan as our Director of Certification and Board Secretary.

Congratulations to Esteban Sanchez, our new Chair of the Functional Sizing Standards Committee. I appointed Mr. Sanchez to fill the vacancy when Mr. French was elected to the board.

Thanks to all our volunteers who work so diligently to make IFPUG the premier professional software measurement and analysis organization in the world.

**Charles Wesolowski**

IFPUG President

Remember as a child being prompted with the question, "What do you want to be when you grow up?" Personally, I'm well past the age of "grown-up" so the question is no longer relevant. But it may be a relevant question for the *MetricViews*.

As IFPUG's flagship journal, revisiting the question of what *MetricViews* is or should be, from time to time, seems apropos. In your view, is *MetricViews*:

- a. perceived as a technical journal for software functional and non-functional measurement, or
- b. a scholarly assortment of measurement research, or
- c. a thought provoker for innovation, or
- d. perhaps a casual forum for the expression of opinions related to software cost, defects and productivity, or
- e. a place for IFPUG members to expand their publication prowess, or
- f. a combination of some of the above, or
- g. something entirely different than any of the above?

**Perhaps even more specifically:**

- What are the expectations of *MetricViews*' readership?
- What are the general expectations of the Board of Directors and related committees for *MetricViews*?
- Does IFPUG as an organization care about the quality of the content of *MetricViews*, and if so, how does one define quality?
- Is historic data published in *MetricViews* used for comparison and trending or is the same data used repeatedly over the years with few changes?
- Are shorter poignant articles interesting to the readership? Do they balance the longer more in-depth articles?
- Should articles be written in conversational English or rather do the rules of grammar prevail?
- How much editing is fair to the authors and what is the Editorial Review Board's responsibility to IFPUG's membership and broader audience?
- This issue includes an article on the history of function point usage and growth in Brazil. Should we feature a country's journey in each issue, or devote an entire issue to IFPUG's top membership nations function point journey?
- Should we have articles that are submitted to be peer-reviewed by a field of experts? Currently, articles are reviewed by at least one peer but they are not "peer-reviewed" for validated content. Peer reviewing may add a degree of quality to those articles yet, it might also be contentious; that is, authors may need to defend their work if not supported with respected citations.

Growing up seems to be harder than I first anticipated. But don't let that prevent you from enjoying the many thoughtful articles in this spring's *MetricViews*.

Be well, stay well.

**Joe Schofield**  
*MetricViews* Editor



# IFPUG APPLICATION DEVELOPMENT AND MAINTENANCE (AD/M) BENCHMARKING CERTIFICATION

By: Julián Gómez

**T**he Business Applications Committee (BAC) Task Force recently completed the development of a new IFPUG certification program. The IFPUG Application Development and Maintenance (AD/M) Benchmarking Certification represents a standard method through which IFPUG affirms that a benchmarking service provider has fulfilled the competency requirements necessary to conduct an AD/M benchmark analysis. The certification process includes a review of evidence from the provider based on applicable ISO/IEC 29155 tasks and activities.

During the past 24 months, the BAC Task Force members worked to design, develop and implement a certification program designed to provide the following benefits:

- Achieve a best-in-class corporate level benchmarking qualification
- Establish a standard for requirements, guidelines and qualifications for AD/M benchmarking
- Apply a consistent approach used by both benchmarking consultancy companies and software suppliers
- Define and evaluate the ability and the quality of their benchmarking process.

Several artifacts were created as part of the overall process. These consist of a formal Certification Application that includes a code of ethics, a disclaimer and a checklist questionnaire to be used by the candidate company. The checklist contains 14 questions and evidence descriptions covering a selected set of ISO activities grouped by: Requirements, Execution and Outcomes.

The final step in the development of the program was to conduct a pilot study. Between July and September of 2021, the task

force team submitted the certification process to a testing period by conducting a pilot with a candidate company. LedaMC was selected for the pilot program. The pilot assessment was completed in September 2021 and included a recommendation for the approval of LedaMC's IFPUG AD/M certification.

After the pilot, the BMK committee discussed outcomes with LedaMC to capture lessons learned from the pilot. Key LedaMC participants were interviewed. The following excerpts are from those interviewed.

## Why was it important for LedaMC to participate in this pilot study?

LedaMC's main reason has always been to help IT become more efficient day-by-day leading to ongoing innovation.

Concerning benchmarking, we are fully convinced of its importance for the SW development industry given current trends. More than 15 years ago we started working on having one of the most complete databases of projects in the world collected from different customers, environments, technologies, etc. We incorporated the content of the database we acquired from QPMG, which we continue to enrich each year.

In the circumstances in which we are living, it is of vital importance to verify and contrast any decision—what better way to do it than using as a mirror the best practices of your sector? We believe that without a doubt, benchmarking is a MUST.

Therefore, being able to participate in this pilot to, on the one hand, certify that our process is optimal and on the other hand, to contribute all our know-how and experience of more than 15 years in this field has been a real pleasure.



## What do you think are the most important benefits for your customer of having the certification?

We believe that one of the most difficult issues to achieve in today's IT world is trust. Today we can proudly say that all of our clients have blind trust in our capacity, knowledge and experience.

For those potential customers who do not yet know us and either want to check their decisions or simply improve their software development and/or optimize their costs, having a certification like this ensures that they can trust that the methods we apply are reliable and meet the highest standards of an organization of the caliber of IFPUG.

When we provide data drawn from the more than 65,000 market references we have available, a customer can be confident that our calculations are comprehensive and have been performed to the highest industry standards. In short, you can trust the information we are providing.

## Were the steps in the certification program well-defined?

The certification program is well-defined. We think it is good to have the initial kickoff session where all the parties involved are aligned and it is clear who is responsible for what.

This facilitates the process and keeps everything under control from the very beginning. Communication with the team was also constant, which made everything flow smoothly. Sincerely, we have managed to define a simple and fluid process.

## What was the biggest obstacle to this type of audit?

The main obstacle typical of any audit process is finding the necessary evidence.

For certain requirements of the process, locating evidence in meeting minutes and email can be time-consuming, but hopefully successful. The perseverance and diligence of both parties can be enabled by their trusted relationship throughout the benchmark.

Another point is the confidentiality of the information. For us, it is a very important point that we bring to our clients; that is, to safeguard their information. In some cases, it is not easy to provide evidence without breaching it. We cannot provide it and continue looking for it. (Note from the task force: This has been addressed and changes have been made.)

## Did you gain any insights that would lead to improving your benchmarking practice?

One of the points we pursue in our benchmarking is that our reports are self-contained and self-sufficient. We try to make the report understandable to anyone who is not familiar with the process without the need for additional knowledge promoting transparency and reliability in the process.

When executing the certification process, we have identified some benchmarking activities that appeared in the background. This has allowed us to make them more visible so that they are fully identified and described.

## How does LedaMC plan to use this certification?

We are currently communicating to our customers that we have obtained this certification. We plan to share more about benchmarking with the whole IT community, including a webinar (first in Spanish and then in English) about the benefits of benchmarking and also a document with different insights on how to benchmark successfully.

## For more information...

Please access the IFPUG website. The site has the information and documents needed to apply for certification and to participate in the BMK certification process. Prerequisites include:

- IFPUG corporate membership,
- completion of at least three benchmarks studies in the last three years, and
- contact information of three internal or external clients that the applicant has completed benchmarks for during the last five years.

The certification fee is \$3,000 and is valid for a maximum of three years. If the candidate company fails to pass the assessment, it can reapply for certification for \$1,500 within six months.

Having accurate and reliable data is critical for companies to survive in today's highly competitive business world. Companies must ensure they are focused on the appropriate goals by comparing their performance against the industry. IT organizations achieve that, goal by using highly reputable benchmarking data and reports.

## Business Applications Committee (BAC)

Thanks to the BAC Task Force members David Herron, Don Beckett, Iván Pinedo, Pierre Almén and Sergio Brigido for their work creating this new certification, as well as LedaMC's contact Alfonso Gonzalez. 

## ABOUT THE AUTHOR



**Julián Gómez** Manager of LedaMC & Quanter with more than 21 years of experience in IT Project and Services management, Julián is focused on helping companies to improve their software development processes. He has participated in Software Development projects, Quality Assurance projects, Sourcing, Benchmarking, Software supplier productivity management services, Process Development and Improvement, among others. As an IFPUG Certified Function Points Specialist, IFPUG Certified SNAP Practitioner, PMI Project Management Professional PMP®, PMI Disciplined Agile Scrum Master DASM® and Scrum Manager Autoridad, he has given conferences/trainings in Argentina, Brazil, Chile, Colombia, Italy, Spain, Panama, Peru and Romania. All these experiences have given him a broad vision of Project Management and its best practices. He is the author of two books *El Juego de Tronos de los Proyectos* and *Guía Práctica de Estimación y Medición de Proyectos Software: ¿Por qué? ¿Para qué? y ¿Cómo?* and blogger in El Laboratorio de las TI (<http://www.laboratorioti.com>).

# Agile Transformational Coaching

offered by Joe Schofield SCT™, SCAC™, SSMC™, SSPOC™, SMC™, SDC™, SPOC™, SAMC™, and SAFe 5



**Contact Joe directly to tailor for your team**  
(free seats start with just 4 registrations and then accelerate)

### WHY attendees come to Joe's workshops:

- 100% indicated that they received their intended benefit AND would recommend these workshops for others
  - 78% to improve scrum practice and understanding
  - 75% to expand career opportunities
  - 75% to be a better agile team member
- 32 attendees / two workshops / ABQ / 2019

### Scrum Certification Workshops (clip)

Scrum Master | Product Owner | Scrum Developer

Remote with materials shipped to you and in-person workshops, public or at your site! Exam always included.

Joe's ScrumAlums | Upcoming workshops & pricing

### The 2-day Agile Bootcamp (clip)

Transitioning to Agile | Skills for Scrum Success

| Kanban Concepts and Practices | Ready,

Scale, Aim



## FUNCTIONAL MEASUREMENT IN BRAZIL A GLIMPSE INTO THE PAST WITH MAURICIO AGUIAR

By: Joe Schofield

**R**ecollecting that the “I” in IFPUG stands for International should surprise none of our members; however, the rapid adoption and sustained participation by our members in Brazil may be a surprise. Granted, Brazil is South America’s most populous nation with more than 210 million people. Nearly one-half of its residents are under the age of 21. Brazil’s economy is one of the world’s 12 largest.<sup>9</sup> All totaled, roughly 13 of the world’s 15 largest economies have IFPUG members.

Brazil, like many of IFPUG’s membership countries, sustains a prominent role in software measurement through participating volunteers and its application of function point analysis. Brazil had the highest number of CFPS professionals for most of the past 10 years, has been the source of many committee members, three Board members and a two-time IFPUG president. This article offers a recap of that involvement through 2012 and an update since that time. Brazil’s history reflects some of the struggles and successes that many of us face as members, organizations and nations. Some of the insights you might collect by reading this brief article touch upon the roles of measurement, people and government specifically across Brazil.

### Abridged Background

In 2012, Mauricio Aguiar’s presentation in Rome<sup>1</sup> summarized the introduction and adoption of Function Points in Brazil. A closer review of this lengthy seminal article is recommended for the interested reader. Following is a mere sampling of the content in the referenced paper from 2012 and revisited in a recent interview in 2022:

**1994** – the first CFPS exam in Brazil sponsored by UNISYS Eletronica

**1995** – the first software measurement book published in Brazil by Aguinaldo Aragon<sup>2</sup>

**1998** – the establishment of the Brazilian Function Point Users Group (BFPUG)

**2000** – the election of the first Brazilian to the IFPUG Board of Directors

**2001:2007** – 1098 CFPS candidates in major cities around Brazil took the exam

**2009** – BFPUG begins to sponsor annual conferences

**2010** – Brazil's largest city, Sao Paulo, was the site of the International Software and Measurement Analysis (ISMA) Cinco featuring many international speakers

**2010** – Brazil's government, via its Ministry of Planning, introduced the use of Function Point Analysis for software development contracts; Brazilian organizations begin to utilize a "price per function point" approach for software development contracting

**2012** – memberships in Brazil account for 34% of all of IFPUG's<sup>3</sup>, and CFPS certifications from Brazil to 42%<sup>4</sup>

## Catching up with Mauricio Aguiar – International Appeal and Outreach . . .

In the late 1990s, Mauricio was co-responsible for hundreds of software developers at Brazil's Caixa Econômica Federal Bank, a state-owned institution, the fourth largest in Brazil and Latin America.<sup>5</sup> Function Points were being used at Caixa for contracting software development and support costs. In 2008 the Brazilian Ministry of Planning established guidelines for using metrics for software development contracts. This directive opened the door for stronger contract negotiation based on product, in this case, software sized with function points. About that same time, the Gartner Group was advocating Function Points for sizing software capability. Several other consulting companies, airlines and financial institutions were adopting Function Points as part of their measurement efforts. These events set the stage for Mr. Aguiar's professional interest in Function Points and subsequent involvement in IFPUG. He founded BFPUG in 1998 and within a year its membership approached 100.

Mauricio credits then IFPUG Board Members for their encouragement, advocacy and mentorship beginning at his first IFPUG event that he attended in New Orleans in the spring of 1999. Later that fall he joined the CMC at what was described as the "boat" conference, also in New Orleans. Subsequently, he was elected to the IFPUG Board of Directors as the first non-North American (nNA). His first role was that of the Director

of International Affairs, a title that would attract innuendo and raised eyebrows. Mauricio would become IFPUG's first nNA President in 2005 and IFPUG's second-ever two-year two-term President re-elected in 2017. He hosted the first IFPUG annual conference outside of North America in 2010, ISMA Cinco in São Paulo, Brazil's largest city. As early as 2012, 42% of all IFPUG's CFPS professionals resided in Brazil; another first highest outside the United States, and more than one-third of IFPUG's membership resided in Brazil. In 2013 he hosted the ISMA conference in Rio de Janeiro and returned to São Paulo in 2018. Reinforcing the international flavor and wide-reaching sharing of cultures and ideas, the 2018 conference included speakers from not less than five nations. As recently as 2020, Brazil still had 28% of the world's CFPS professionals.



**Brazil, like many of IFPUG's membership countries, sustains a prominent role in software measurement through participating volunteers and its application of function point analysis.**

Mr. Aguiar acknowledges several others with major contributions to the emergence of IFPUG, function point analysis and software measurement in Brazil. Marcio Silveira and Diana Baklizky, both former IFPUG committee and Board members, have recognized names in IFPUG circles. Similarly, Carlos Vasquez's groundbreaking work promoting software measurement was impactful throughout Brazil. Of course, many other prominent individuals have helped to promote software cost estimation throughout the country.

The use of Function Point Analysis throughout Brazil, especially for software cost estimation and contracting is but one example of its early international appeal. Other national governments including Italy and South Korea established similar directives. Much of the success of FPA in Brazil stems from Mauricio's passion and investment in IFPUG, BFPUG and software

**TI Métricas**  
Find where you are. Go where you want to.  
[www.metricas.com.br](http://www.metricas.com.br)

measurement in general including his interests in the Constructive Cost Model, aka COCOMO. Due to his internationally recognized software measurement interests, in 2004 he was invited to speak to a South Korean chapter of IFPUG in South Korea along with fellow IFPUG past president Carol Dekkers. Mauricio shared the significance of FPA with in-person presentations in the United States, Italy, Argentina, Colombia, Mexico, Spain and the Netherlands.

While not as actively involved in TI Métricas today, Mauricio grapples with applying agile value delivery thinking to traditional software development contract pricing. Asserting that size divided by price equals unit cost (size/price = unit cost) he is uncomfortable with agile-based contracts that suggest as he describes “give us some money and we’ll deliver what we can.” In his mental model, that agile funding model is similar to paying for effort and not results.

Pandemics disturb economies, business commitments and people relationships. The same can be said about the convening of professional groups like BFPUG and IFPUG. BFPUG last gathered in person in 2019. Travel restrictions, changing health and safety protocols, and general disruptions have taken a toll on many lives, businesses and organizations. While some prognosticators suggest that things will never go back to the way they were, others may argue we will not experience leaps in progress given today’s circumstances. Professional groups like IFPUG, BFPUG, NESMA, GUFPI-ISMA and ISBSG help to evolve the nature of software measurement, software development and, as evidenced above, governments and economies. We often underestimate the relevance of such organizations and volunteers in shaping our futures. No doubt Brazil’s adoption and application of FPA has contributed to the growth and prominence in IFPUG in the earliest decades of our millennia.

## Postscript and Congratulations

In the fall of 2021, Mauricio Aguiar was nominated and inducted as an Honorary IFPUG Fellow.

## Special Thanks

Mauricio Aguiar for numerous interviews and reviews related to the accuracy of this article and Michael Canino for his research into the CFPS numbers for the past 10 years referenced in this article. 🍷

## REFERENCES:

- <sup>0</sup> <https://www.investopedia.com/insights/worlds-top-economies/>
- <sup>1</sup> When Metrics Mean Business; Software Measurement European Forum; Mauricio Aguiar; 2012; Rome, Italy
- <sup>2</sup> Gerencia Efetiva de Software Atraves de Metricas (Effective Software Management through Metrics); Aguinaldo Aragon; 1995
- <sup>3</sup> Different membership types make this number difficult to verify from IFPUG records; this value was generally understood at that time
- <sup>4</sup> Unofficial best number from CMA; Michael Canino; 3/14/2022
- <sup>5</sup> Caixa Econômica Federal, also referred to as Caixa, is a state-owned Brazilian financial services company headquartered in Brasília, Brazil. It is the fourth largest banking institution in Brazil, as well as the fourth largest in Latin America,

## ABOUT THE AUTHOR



**Joe Schofield** has more than 80 published books, papers, conference presentations and keynotes including contributions to the books *The IFPUG Guide to IT and Software Measurement*, *IT Measurement*, *Certified Function Point Specialist Exam Guide*, *The Economics of Software Quality* and his recently released *Aligning People and Culture for Agile Transformation*. He has facilitated ~200 teams in the areas of software specification, team building, organizational planning and Agile transformation. He holds eight Agile-related certifications: SA, SCT™, SSMC™, SSPOC™, SMC™, SDC™, SPOC™ and SAMC™. Joe was a CMMI Institute-certified instructor, an IFPUG Certified Function Point Specialist (CFPS) and a Lockheed Martin-certified Lean Six Sigma Black Belt. He is a past IFPUG President and for more than a decade he served as the “Chief Process Officer” of an organization of 400 software engineers.

# HIGH-EFFICIENCY DEFECT REMOVAL FOR SOFTWARE PROJECTS

By: Capers Jones

**S**oftware quality depends upon two important variables. The first variable is that of “defect potentials” or the total of bugs likely to occur in requirements, architecture, design, code, documents and “bad fixes” or new bugs in bug repairs. Defect potentials are measured using function points, since “lines of code” cannot deal with requirements and design defects.

The second variable is “defect removal efficiency” (DRE) or the percentage of bugs found and eliminated before the release of software to clients. Defect potentials and defect removal efficiency metrics were developed by IBM circa 1973 and are widely used by technology companies. Function point metrics were also invented by IBM during the same period.

The metrics of “defect potentials” and “defect removal efficiency (DRE)” are useful quality metrics developed by IBM circa 1973 and widely used by technology companies as well as by banks, insurance companies and other organizations with large software staffs.

Defect potentials are the total of bugs found in requirements, architecture, design, code and other sources of error. The approximate U.S. average for defect potentials circa 2022 is shown in Table 1 using International Function Point Users Group (IFPUG) function points version 4.3. Function point metrics were also invented by IBM in the same period circa 1973.

Function points were invented by A.J. Albrecht and colleagues at IBM White Plains. Defect potential and DRE metrics were developed by Michael Fagan, Ron Radice, Capers Jones and other IBM personnel at IBM Kingston and IBM San Jose to validate the effectiveness of inspections. Function point metrics, defect potential metrics and DRE metrics were placed in the public domain by IBM.

Function points have become the most widely used software metrics in 2022. Responsibility for counting rules belongs to the IFPUG, which is probably the largest software measurement group in the world.

Defect potentials and DRE metrics are widely used by technology companies but do not have a formal user group as of 2022. These metrics are frequently used in software benchmarks produced by organizations such as the International Software Benchmark Group (ISBSG) and many others. These metrics are also standard

outputs from several commercial software estimating tools such as the author’s Software Risk Master (SRM) estimation tool, which was used to produce the tables in this report:

**Table 1: Average Software Defect Potentials circa 2022 for the United States**

REQUIREMENTS	0.72 defects per function point
ARCHITECTURE	0.10 defects per function point
DESIGN	0.95 defects per function point
CODE	1.15 defects per function point
SECURITY CODE FLAWS	0.25 defects per function point
USER DOCUMENTS	0.45 defects per function point
BAD FIXES	0.65 defects per function point
<b>TOTALS</b>	<b>4.27 defects per function point</b>

Note that this table has stayed almost constant for five years since 2017. Requirements defects have gone up slightly because most easy applications already exist.

The phrase “bad fix” refers to new bugs accidentally introduced in bug repairs for older bugs. The current U.S. average for bad-fix injections is about 7%; i.e., 7% of all bug repairs contain new bugs. For modules that are high in cyclomatic complexity and for “error-prone modules” bad fix injections can top 75%.

Defect potentials are of necessity measured using function point metrics. The older “lines of code” metric cannot show requirements, architecture and design defects not any other defect outside the code itself. (Since the year 2015 function points have been the most widely used software metric).

The overall U.S. range in defect potentials runs from about 1.50 per function point to more than 6.00 per function point. Factors that influence defect potentials include team skills, development methodologies, CMMI levels, programming languages and defect prevention techniques such as joint application design (JAD) and quality function deployment (QFD).

DRE is also a powerful and useful metric. Every important project should top 99% in DRE, but few do. The current U.S. range in DRE is below 80% for projects that use no pre-test defect removal and only a few test stages. The highest measured DRE to date is about



99.95%. and this level required pre-test inspections, static analysis and at least eight test stages. The current U.S. average in DRE is just more than 92%, which is only marginal. All projects should top 97% and the best should top 99%.

DRE is measured by keeping track of all bugs found internally during development and comparing these to customer-reported bugs during the first 90 days of usage. If internal bugs are found during development total 95 and customers report five bugs, DRE is 95%.

Table 2 shows U.S. ranges of DRE by applications size measured in IFPUG function points:

**Table 2: U.S. Software Average DRE Ranges by Application Size**

FUNCTION POINT	BEST	AVERAGE	WORST
1	99.95%	97.00%	94.00%
10	99.00%	96.50%	92.50%
100	98.50%	95.00%	90.00%
1,000	96.50%	94.50%	87.00%
10,000	94.00%	89.50%	83.50%
100,000	91.00%	86.00%	78.00%
<b>Average</b>	<b>95.80%</b>	<b>92.20%</b>	<b>86.20%</b>

As can be seen, DRE comes down as the application size goes up. For that matter, defect potentials go up with application size. Large systems above 10,000 function points are very risky due to high defect potentials and low DRE values.

Table 3 shows approximate DRE values for common pre-test and test methods although there are variations for each method and also for the patterns of methods used. Note that Table 3 omits architecture bugs due to the small size of the example of only 1,000 function points.

Table 3 assumes top-level experts, the quality-strong “team software process” (TSP) methodology, the Java programming language and CMMI level 5. Therefore defect potentials are well below current U.S. averages.

To illustrate the principles of optimal defect prevention, pre-test removal and test defect removal, Table 3 shows a sequence of pre-test and test stages that will top 99% in defect DRE. Table 3 illustrates 1,000 function points and about 53,000 Java statements. Table 3 is taken from the quality output predictions of the author’s Software Risk Master (SRM) estimating tool:

**Table 3: DRE >99%**

	<b>Defects</b>
<b>REQUIREMENTS DEFECT POTENTIAL</b>	134
<b>DESIGN DEFECT POTENTIAL</b>	561
<b>CODE DEFECT POTENTIAL</b>	887
<b>DOCUMENT DEFECT POTENTIAL</b>	135
<b>TOTAL DEFECT POTENTIAL</b>	<b>1,717</b>
<b>PER FUNCTION POINT</b>	1.72
<b>PER KLOC</b>	32.20

DRE measures can be applied to any combination of pre-test and testing stages. The U.S. norm is to use static analysis before testing and six kinds of testing: unit test, function test, regression test, performance test, system test and acceptance test. This combination usually results in about 95% DRE.

Critical software for medical devices, avionics packages, weapons systems, telecommunications switching systems, operating systems and other software that controls complex physical devices use full pre-test inspections and static analysis plus at least eight kinds of testing. These applications need to top 99% in DRE to operate safely.

To top 99% in DRE Table 2 shows several forms of defect prevention and includes inspections as an important pre-test removal method. Formal inspections have the highest DRE of any known method and more than 50 years of empirical data.

Due to inspections, static analysis and formal testing by certified test personnel, DRE for code defects can top 99.75%. It is harder to top 99% for requirements and design bugs since both resist testing and can only be found via inspections or by text static analysis.

<b>DEFECT PREVENTION</b>	<b>EFFICIENCY</b>	<b>REMAINDER</b>	<b>BAD FIXES</b>	<b>COSTS</b>
Joint Application Design (JAD)	27%	1,262	5	\$28,052
Quality Function Deployment	30%	888	4	\$39,633
Prototype	20%	713	2	\$17,045
Models	68%	229	5	\$42,684
<b>Subtotal</b>	<b>86%</b>	<b>234</b>	<b>15</b>	<b>\$127,415</b>

<b>PRE-TEST REMOVAL</b>	<b>EFFICIENCY</b>	<b>REMAINDER</b>	<b>BAD FIXES</b>	<b>COSTS</b>
Desk check	27%	171	2	\$13,225
Static analysis	55%	78	1	\$7,823
Inspections	93%	5	0	\$73,791
<b>Subtotal</b>	<b>98%</b>	<b>6</b>	<b>3</b>	<b>\$94,839</b>

<b>TEST REMOVAL</b>	<b>EFFICIENCY</b>	<b>REMAINDER</b>	<b>BAD FIXES</b>	<b>COSTS</b>
Unit	32%	4	0	\$22,390
Function	35%	2	0	\$39,835
Regression	14%	2	0	\$51,578
Component	32%	1	0	\$57,704
Performance	14%	1	0	\$33,366
System	36%	1	0	\$63,747
Acceptance	17%	1	0	\$15,225
<b>Subtotal</b>	<b>87%</b>	<b>1</b>	<b>0</b>	<b>\$283,845</b>

			<b>COSTS</b>
<b>PRE-RELEASE COSTS</b>		<b>1,734</b>	<b>3</b>
<b>POST-RELEASE REPAIRS</b>	<b>(TECHNICAL DEBT)</b>	<b>1</b>	<b>0</b>
<b>MAINTENANCE OVERHEAD</b>			<b>\$46,545</b>
<b>COST OF QUALITY</b>	<b>(COQ)</b>		<b>\$553,302</b>

DEFECTS DELIVERED	1
HIGH SEVERITY	0
SECURITY FLAWS	0
HIGH SEVERITY %	11.58%
DELIVERED PER FP	0.001
HIGH SEVERITY PER FP	0.000
SECURITY FLAWS PER FP	0.000
DELIVERED PER KLOC	0.014
HIGH SEVERITY PER KLOC	0.002
SECURITY FLAWS PER KLOC	0.001
CUMULATIVE REMOVAL EFFICIENCY	99.96%

## Summary and Conclusions

The combination of defect potential and DRE measures provides software engineering and quality personnel with powerful tools for predicting and measuring all forms of defect prevention and all forms of defect removal.

Function point metrics are the best choice for normalizing defect potentials since they can include the defects found in requirements, architecture, design and other non-code defect origins. The older lines of code metric can only measure code defects which are usually less than 50% of total defects. 🚫

## ABOUT THE AUTHOR



**Capers Jones** founded Namcook Analytics, an international software consulting company. Clients include Apple, AT&T, Boeing, Huawei, IBM, Internal Revenue Service, Microsoft, MITRE, NASA, NSA, Sony, U.S. Navy and similar companies and government agencies that produce large software projects. He has served as keynote speaker at major software conferences in the United States, Europe, South Korea, Singapore and Japan and was named software engineering advisor to the governments of South Korea and Malaysia in 2011. As assistant director of software engineering at ITT Corporation, Programming Technology Center in Stratford, Connecticut, his responsibilities included introducing state-of-the-art tools and methods into the 75 major companies owned by ITT that produced software. He also served as the software representative to the ITT Corporate Quality Council. Jones also held software engineering research and management positions at IBM Corporation Software Labs in Boulder, Colorado and San Jose, California. He also served as lead software engineer at Crane Company in Chicago Illinois and software engineer at the Office of the Surgeon General in Washington D.C. Some of his books are translated into Chinese, French, German, Italian, Japanese, Korean and Russian language editions. These books sell globally.

**Size and analyse your backlog effortlessly**  
IFPUG, SiFP and so much more.



See it work with your own requirements:  
[www.scopemaster.com/schedule-demo](http://www.scopemaster.com/schedule-demo)

Total Functional Size Estimate			
Sized requirements	146	69	
Ambiguous requirements (ie. no functionality detected)	103	48	
All functional requirements (sized + ambiguous)	249	117	
Potential missing requirements (from CRUD analysis)	259	84	Estimated
Total Potential (sized + ambiguous)			

ScopeMaster QUALITY SCORE	DEFECTS
3.5	Ambiguous : 0 Pot. Missing : 88 Pot. Duplicated : 9

**IFPUG Functional Size Estimates unadjusted function points**

**Detected Functionality**

Number of ILFs found at least once: 64 (the max potential ILF count)  
 Number of ILFs found more than once: 17 (most likely ILF count)  
 Number of EOs: 43  
 Number of Ets: 54  
 Number of EOs + Ets: 97  
 ScopeMaster® detected functionality within 64 of 151 requirements 42.38%

# Quantity Surveying **FOR SOFTWARE**



By: **Bram Meyerson**

**I**n order to sustain and improve their performance, modern organizations employ Enterprise Architects to design for the future. Application architects then configure the way that software systems need to work together to support effective business processes. Architecture teams are now seen as critical competencies to enable the capable enterprise.

“The software profession needs to embrace the principles of quantity surveying underpinned by objective measurement to overcome the challenges that software projects face.”

Traditionally, architects plan and design structures and property developments to accommodate the future needs of businesses and citizens. They work closely with quantity surveyors (QS) who size, scope, prepare cost quotations, and then manage these projects. Both the architect and QS work to achieve the best outcomes for their clients. They measure and value work in progress, determine the value of variations ordered and ensure that a fair and equitable settlement of the cost of the project is reached in accordance with the contract conditions. The construction industry would not exist without the QS profession.

Why then do executives not insist on using independent professional software quantity surveyors (SQS), particularly on multi-million dollar software initiatives?

After all, software delivery projects are inherently risky. The software profession needs to embrace the principles of quantity surveying underpinned by objective measurement, to overcome the challenges that software projects face. The size of systems and projects is often synonymous with utility required or indeed its functional richness or complexity. It is calculated using an international standard called a Function Point Count.

“How can you manage a project if you don't know how big it is? How do you know what it should cost if you don't have a grip on its size?”

Size and scope management are particularly important when software development services are outsourced or subcontracted and Function Point Analysis has proven to underpin successful supplier cost management.

After construction, the QS may be involved with tax depreciation schedules, replacement cost estimation and, if necessary, mediation and arbitration. Similar challenges, but related to software, exist within corporates. Forward-thinking chief information officers (CIOs) should include software QS-style professionals, or software economists on their advisory boards.

From an accounting perspective, physical construction is recorded as a capital expense. Contemporary thinking is that software development is an ongoing operational expense. Perhaps the provision of the key infrastructure design and development should be capitalized and the continuous delivery of features, recorded as operational? In any event, there is no getting away from the need to size the software and to do so in a standardized and professional way. Successful software delivery depends on effective cost management in the achievement of economic value for project sponsors. The software industry needs to embrace SQS!

It is well known that projects are regarded as failures if they are delivered late, overrun their budget, don't meet their quality targets, or don't deliver usable products. Flawed estimation or poor business decision-making at the very outset of the project are some of the chief culprits. Other contributors are ineffective scope management, lack of project measurements, and poor supplier monitoring.

Despite the best intentions of the application architects, software requirements are often loosely defined, and approaches to development aim to be flexible to satisfy the evolving needs of the business. The construction industry works with well-defined requirements and standard engineering and construction materials and methods. Both industries however are notorious for delays, but as the software delivery process is inherently more risky, software developers may have a valid excuse. 🚫

**ABOUT THE AUTHOR**



**Bram Meyerson** is the founder of Quantimetrix, established in 1992 with a presence in the UK and South Africa. He engages with Systems and Finance executives to address their challenges and needs. Bram has worked with some of the world's leading telcos, financial services companies, and government agencies. Quantimetrix owns a vast benchmark database of information pertaining to software projects, underpinned with function point counts, and this is used by his clients to guide sensible decision-making and to evaluate and benchmark the cost of acquisition of bespoke software. Bram also specializes in de-risking and optimizing software application delivery and support processes.

# ACCURACY IN FPA SPREADSHEETS: OPPORTUNITY FOR FPA DATABASE?

By: Marcus Mello

**T**hese are times of great concern with the ethics and honesty of information. Scandals and fraud appear everywhere, and this subject turns out to be extremely relevant.

A lot of work is done to obtain Productivity, Cost, and Maintenance Indicators. There is less focus on the brutal audit result, and accuracy of the Counts, that a function point (FP) database could help to resolve.

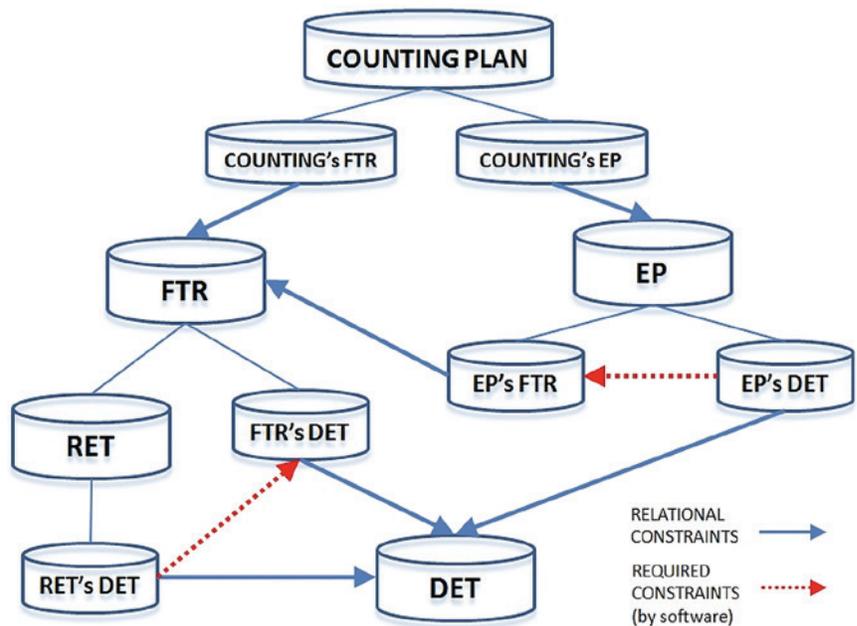
Using two simple examples, this article illustrates how small errors in the counting of DETs or RETs can bring about significant differences in the FP count and how using a database can avoid this situation.

An FP database can expose relationships between the Functions that are obscure and too complex to validate in a Metric Audit for determining Cost and Deadline. As in the simplified sketch image of the database, some of these relationships are:

- Every DET of an RET must belong to the same FTR
- Every DET of an EP must belong to one of the FTRs referenced in the EP
- All FTRs must point to their respective Physical Files/ Tables.

So, using a dropdown list to query an FTR parent table you can get the respective DETs, and will not be possible to count "extra" DETs or FTRs for no Elementary Process.

The same situation applies to an RET parent table to attain their DETs eliminating the possibility to count "extra" DETs in any FTR.



Each FP database element must be linked to its respective Functional Requirement, and its authenticity is quickly confirmed as requested by the functional user.

To demonstrate some security breaches in FP counts with spreadsheets, let's consider the following examples:

- Why does the FTR "CLIENTS" have 5 RETs?
- What are these RETs?
- Which DETs are part of each RET?

FTR	TYPE	RET	DET	COMPLEXITY	FP
Clients	EIF	5	40	Average	7
Products	EIF	4	50	Average	7
Sales	ILF	6	19	Average	10



- Do these DETs actually belong to FTR "CLIENTS?"
- What are the 2 FTRs referenced in the EP (Elementary Process) "Client Query?"
- Does the EP "Sales Record" really need 2 FTRs?
- Does the 19 DETs of the EP "Issue Sales Bill" really belong to the 3 FTRs?

EP	TYPE	FTR	DET	COMPLEXITY	FP
Clients Query	EQ	2	5	Low	3
Sales Record	EI	2	15	Average	4
Issue Sales Bill	EO	3	19	Average	5
					12

It is very easy to enter numbers into a spreadsheet. In extensive counts, it is almost impossible to prevent some RETs from appearing here and other DETs there. We know these values can break the complexity bounds, going from LOW to AVERAGE,

or from that to HIGH. These differences can result in significant differences in the final price of services when they are derived from the FP count.

Consider the impact using the above examples by mistakenly adding only ONE DET or only ONE RET to each function. What kind of failures could occur and what impact will they have on the final cost of the project?

We have now 35 FP, an "addition" of 45.83% more than the 24 FP from the original FTR count!

FTR	TYPE	RET	DET	COMPLEXITY	FP
Clients	EIF	6	40	Average	10
Products	EIF	4	51	Average	10
Sales	ILF	6	20	Average	15
					35

Continuing with the list of mistakes, now with the Elementary Processes worksheet, let's add only ONE DET to each function.

EP	TYPE	FTR	DET	COMPLEXITY	FP
Clients Query	EQ	2	6	Low	4
Sales Record	EI	2	16	Average	6
Issue Sales Bill	EO	3	20	Average	7
					<b>17</b>

We have now **17 FP**, an "addition" of **41.66%** more than the 12 FP of the original EP count!

Our example originally presented a "project" with a functional size of 36 FPs. However, with the flaws listed the count rises to 52 FPs, an increase of 44.44%, which increases the cost as well!

These mistakes are reduced when the counts are stored in an FP Database.

Small errors in a DET or RET count, near the bounds of FP complexity, have a large percentage impact on metrics and, on large projects, it is almost impossible to track them.

**Code** 1

**Type** EIF

**Complexity** AVERAGE

**Name** CLIENTS

**System** SISO

**Document** Enim adim ad minimim veniam

**Comment** Duis auteur irure pain in reprehenderit

**pag\_cap\_sec\_item** 24, VII, b, 8

RET	Code	Name	# DET
	1	First RET	4
	3	Second RET	4
	10	Third RET	5
	11	Fourth RET	3
	12	Fifth RET	6

**Method** Detailed

**Calculate FP!**

# RET	# DET	FP
5	40	7

**Non Mens. code**

Code	Name	Type
1	airport	Element
2	track	Element
4	gate	Element
5	flight	Element
6	cia	Element
12	origin	Element

**Code** 3

**Type** EQ

**Complexity** LOW

**Name** Clients Query

**System** SISO

**Document** Lorem ipsum dolor sit amet

**Comment** Excepteur sint occecat cupidatat non proident

**pag\_cap\_sec\_item** 12, VIII, b, 7

**FTR**

Code	Name	Type
1	CLIENTS	EIF
3	SALES	ILF

**Method** Detailed

**Calculate FP!**

# FTR	# DET	FP
2	5	3

**Non Mens. code**

Code	Name	Type
13	destiny	Element
12	origin	Element
8	airport link	Link
7	cia link	Link
11	query msg	Msg/Hint

In addition to applying audit and accuracy reviews, which will end up preventing considerable losses from errors or fraud, an FP database may also be beneficial to process a large volume of information. Recently, a state-owned company was about to be privatized. To establish the value of its software assets, a complete inventory survey of all technological platforms was carried out. In this case, according to the bidding rules, the winner would be obligated to guarantee 30% size growth of the software measured under the FPA metric.

The first business version of the database was built in Oracle. Displayed is some of the original prototype in MS Access. It was built with 48 tables, 58 forms, and a lot of SQL and Visual Basic code to validate the cross-references.

Here is one form used to manage FTR records and another for Elementary Process.

Finally, this FP database and related code allow the survey of hundreds of management indicators, allowing for quick and assertive decision-making. 🔄

## ABOUT THE AUTHOR



**Marcus Mello** earned an MBA in Strategic Management of Information from UFRJ/Brazil. He has been a mainframe Developer since 1986, has performed Analysis and Implementation of Multiplatform Systems using FPA since 1998, and Audit of Metrics with FPA and Quality Control through 2006. He is an Instructor FPA, Consultant for Metrics and Functional Requirements for Federal Departments and Offices, a Specialist in project measurement for Bids, and a Specialist in FPA Databases for Auditing, Benchmarking and Indicators.

# Simply INNOVATIVE

We support our client to develop more objective self-knowledge and to improve its business performance. This is our mission, since 1967.

DPO provides qualified know-how services in the ICT Governance area and related software products.

Innovation and the culture of measurement are the two main features of DPO, which allow it to respond to different and changing needs and to play an active role in the area of international research. Simple Function Point, a methodology invented by Roberto Meli, CEO of DPO, is an example of this. But that's not all.



*"You cannot measure everything but you can only improve what you measure"*

Roberto Meli

visit **dpo.it**



*the Knowledge Broker*





# USING FLOW METRICS

By: Tom Cagley and David Herron

**F**unctional software measurement is successfully used by companies worldwide. The collection and analysis of measurement data can provide valuable information about the efficiency and effectiveness of the software process. Key software metrics that focus on quality and productivity serve to provide insights that can lead to improvement of the design, development and deployment of the software product.

Many large and small companies worldwide use Function Point Analysis (FPA) and most recently Simple Function Points. Using FPA, many organizations have been able to improve the accuracy of their software estimating practices through the collection and analysis of their measurement data.

Functional software measures can be a helpful predictor as to the possible outcomes of a specific activity, but they fall short of being able to provide insights and ultimately business value to the company. Organizations need to expand their selection of measures to include a set of end-to-end metrics. Rather than focusing on one element of the business, organizations need to understand the flow of business value. For example, if you are measuring only one element of the flow of the system, such as functional size, you may be assessing only one aspect of the value stream.

Flow metrics can provide management with the opportunity to understand and improve the software development and deployment process. Flow metrics measure the end-to-end activities of the software process (often referred to as the value chain) thereby being able to identify opportunities for reducing bottlenecks and improving efficiency and managing the flow of work.

Flow metrics offer a more comprehensive picture of whether or not the flow of work is enough to meet business goals and objectives. By highlighting areas that are bottlenecks,

improvements can be made to maximize the company's delivery of value.

Flow metrics provide process transparency. A solid palette of flow metrics include:

**Dashboard Metrics** provide information about what is currently happening in the team or organization. These metrics will change based on current decisions.

**1. Work in Progress (WIP)** is defined as the amount of work that has arrived to be worked on in a system and has not yet exited the system regardless of whether the item is actively being worked on or being delayed.

Usage Tip: Increasing WIP indicates the team is starting more than they are completing. Review work entry policies (push vs. pull) and search for bottlenecks in the flow.

**2. Flow Distribution (FD)** is the ratio of each flow item or work type within a system and/or value stream.

Usage Tip: Distribution of work (in-process and being delivered) needs to track how the organization thinks it is spending its people and resources or gaps between needs develop.

**Backup Camera Metrics and Review Mirror Metrics** reflect performance in the recent past and trends across time. Changes to teams or organizations take time to show an impact on these metrics.

**1. Story Escape Rate (SER)** is defined as the number of stories that are not done (deployable) by the end of the sprint.

Usage Tip: Use this metric to facilitate a discussion of breaking work down and/or biting off more than a team can chew when using Scrum or Scrumban.

**2. Cycle time (CT)** has two competing definitions. In the more typical definition, CT is defined as the amount of elapsed time that a work item spends as WIP. Cycle time is a direct reflection of the calendar, which is the one element every customer understands. Cycle time (also called flow time even though there might be slight differences in the definition) includes ALL of the calendar time between starting and completing. The second and perhaps more important definition of CT includes lead time in the equation. This version of the cycle time answers how long it takes for a piece of work to be imagined (put on the backlog) and then to be delivered.

Usage Tip: CT provides data on how long work takes to deliver. The ratio of median to 85th percentile is a proxy for team or organization predictability.

**3. Throughput (TP)** is a measure of the number of items that transverse the process in any given period. TP can be thought of as the departure rate, i.e., how many work items are completed and leave the process for a given period.

Usage Tip: TP (also known as Flow Velocity) is useful for planning releases.

Each of these metrics can be derived as work enters and exits a system and conforms to the basic requirements for measurement to be valuable (accuracy, the right level of precision, repeatability



Flow metrics offer a more comprehensive picture of whether or not the flow of work is enough to meet business goals and objectives.

and a shared understanding of what is being measured). The use and collection of data have shaped the flow metrics palette used as an entry-level form of measurement. In circumstances where productivity and estimation are important metrics (contracts and pricing for example), we would rather grapple with the overhead of using IFPUG Function Points than run the risk of using story points and velocity. While sometimes used at a team level, story points are a tool to control work entry, an understanding of throughput and exploding kittens generally yields better conversations and outcomes.

We measure to ask the right questions. The information gleaned from flow metrics provides input and feedback into the process of managing the flow of value. Metrics alone are rarely sufficient; we still need a mind (or minds) to weigh context before making decisions. The five flow metrics provide a powerful set of tools to generate information about the flow of value. 🍀

## ABOUT THE AUTHORS



**Tom Cagley** is a consultant, speaker, author and coach who leads organizations and teams to unlock their inherent greatness. He has developed estimation models and has supported organizations developing classic and Agile estimates. Tom helps teams and organizations improve cycle time, productivity, quality, morale and customer

satisfaction and then prove it. He is an internationally respected blogger and podcaster for more than 11 years focusing on software process and measurement. His blog entries and podcasts have been listened to or read more than a million times. He co-authored *Mastering Software Project Management: Best Practices, Tools and Techniques* with Murali K. Chemuturi. Tom penned the chapter titled "Agile Estimation Using Functional Metrics" in *The IFPUG Guide to IT and Software Measurement*. His certifications include CFPS, IT-CMF Tier 2 Certified Associate, CSM, SAFe SPC, TMMi Assessor and TMMi Professional.



**David Herron** is an authority in the areas of performance measurement, process improvement and functional size, among others. For decades he has been an IFPUG unconditional servant: IFPUG MetricViews editor, chair of the IFPUG Management Reporting Committee, member of the IT Performance Committee, member of the Communications and Marketing Committee... He has put in practice in a huge number of entities, from

different parts of the world, the use of metrics to monitor the impact of IT on the business, in governing outsourcing contracts and has brought the name of IFPUG and its concepts and added value to the highest levels. He was one of the founders of the David Consulting Group and has provided consulting and coaching services for a high number of IT companies. He has been presenter in a number of IFPUG conferences, with topics such as "Identifying Your IT Organization's Best Practices," "The Need for Auditing Your Measurement Program," "Early Lifecycle Identification of Software Quality Risk Factors," "The Lighter Side of Software Measurement;" author of a number of articles and co-author of different books such as *Measuring the Software Process: A Practical Guide to Functional Measurements* and *Function Point Analysis: Measurement Practices for Successful Software Projects*

## CERTIFICATION COMMITTEE

By Cinzia Ferrero

The Certification Committee works daily to:

- Support IFPUG members to take the CFPS/CFPP (IFPUG FP) and CSP (IFPUG SNAP) exams
- Help IFPUG members in applying the CFPS/CFPP Certification Extension Program (CEP) to maintain certifications without retaking the certification exam.

We are pleased to announce that the CFPS/CFPP exam is now also available in Korean. Special thanks go to KOSMA and our partner Brightest for their invaluable collaboration, without which this result would not have been possible. We hope this new offering will help Korean IFPUG members take the exam more smoothly.

At ISMA19, which will take place in June 2022, CFPS certified IFPUG members will be able to follow a presentation that will allow them to apply for a one-year extension of their certification.

As already happened on 7 October 2021, we are working to ensure that CSP certified IFPUG members can also be offered the opportunity to extend their certification for one year at this event. Stay tuned.

We are working with the Non-Functional Sizing Standards Committee to:

- Create the Certified SNAP Specialist and the dedicated CEP program. The task force also works to allow those with an active CSP certification to update it and turn it into CSS.
- Have an Italian version of the SNAP exam.
- Create a management and use process of SNAP Training Materials.

A big thank you to all the members of the committee who, with their dedication, competence and professionalism, allow the achievement of these great results!

## FUNCTIONAL SIZING STANDARDS COMMITTEE

By Esteban Sanchez

The Functional Sizing Standards Committee (FSSC) continues with its mission to generate value for IFPUG and its members

by maintaining the Counting Practices Manual and constantly producing guidelines to aid in the application of Function Points to emergent technologies. All members enjoy working together for the benefit of the Function Points community!

A significant amount of work has been put into the release and follow-up work of the brand-new Simple Function Points (SFP) manual. The FSSC has contributed to the revision and release of the manual and is happy to support the ongoing efforts of the SFP task force in the creation of related artifacts such as training and marketing materials, certification exam, quick reference guide and counting forms. Working together with other committees, we will make SFP a successful worldwide standard.

In a joint effort with the Non-Functional Sizing Standards Committee (NFSSC), we have recently released the Boundaries and Partitions White Paper, which brings fundamental information for combining Function Points and SNAP within the same counting scope. We are also very close to releasing new papers on the topics of Elementary Processes and Microservices Architecture. Agile methodologies are a strong tendency, and we are working on related papers for User Stories and Kanban. Mobile Applications, Cloud and System Clock are other topics we are researching. Stay tuned for all the amazing things we are “cooking” for you!

We are always excited to recruit new talent. If you are interested in joining the committee or working as a non-member volunteer on any current or future project, please complete the IFPUG Volunteer Form and send it to Michael Canino at [mcanino@cmasolutions.com](mailto:mcanino@cmasolutions.com).

Our mission is to serve IFPUG and its members and we love to innovate. If you have feedback or suggestions for new projects, we definitely want to talk to you. Please kindly submit your comments to [esanchez@galorath.com](mailto:esanchez@galorath.com).

## PARTNERSHIPS & EVENTS COMMITTEE

By Sushmitha Anantha

The Partnerships and Event Committee (PEC) continues to arrange events for bringing our member base together for knowledge sharing and driving strategic partnerships for IFPUG.

### Events:

On December 15, Pierre Almen, Chair of Business Applications Committee at IFPUG, delivered a webinar on The New IFPUG AD/M Benchmarking Certification. The presentation was well received and created much interest

among the audience. Subsequent presentation on detailed process of IFPUG AD/M Benchmarking Certification was presented by David Herron, a member of the IFPUG Business Applications Committee and Co-founder of David Consulting Group, during the Coffee Talk held on April 29.

In the month of February, Fabrizio Di Cola (Chair of IFPUG NFSSC) and Daniele Zottarel (Member of IFPUG FSSC) from Sogei Spa presented the topic “Non-Functional Measurement in a Functional World” covering a practical approach toward implementation of SNAP-based non-functional size estimation in any organization that uses Functional Size Measurement.

In collaboration with other committees and the IFPUG Board, we are planning to arrange ISMA19, a virtual conference on June 24. The event will have four interesting presentations covering the areas of Function Points, SNAP and Simple Function Points. Attending the event will offer eligibility for a one-year extension of CFPS and CSP certifications.

#### Partnerships:

On March 29, Christine Green, Immediate Past president of IFPUG, and Roberto Meli, Director of Special Projects at IFPUG, addressed the SOFTECASIA 2022 Mini Conference. This conference was held at Kuala Lumpur and was offered in physical and virtual mode. Christine Green spoke about “Introducing IFPUG: How can you benefit from sizing standards?” and provided details on the functions of IFPUG and business benefits of using IFPUG Sizing Standards in successful projects. Roberto spoke on the topic “Function Points and Testing: How can they work together?” covering how Function Points may be useful in feeding the knowledge of testing process and results. Participation in this conference was strategically important for IFPUG looking at expansion in the pan-Asia region and as part of our partnership with the Malaysian Software Testing Board.

Advancing our partnership with Netherlands Software Metrics Users Association (NESMA), IFPUG announced our agreement with NESMA recognizing that we share specific objectives. IFPUG and NESMA have agreed to cooperate in overlapping domains of expertise, as well as mutually work on endorsement of the sizing standards, mutual development of content, facilitating professional networking opportunities and joint development and promotion of educational activities in the area of software sizing, metrics and measurement.

We regularly offer platforms for interesting topics to be discussed at our Coffee Talks. Please write to [pec@ifpug.org](mailto:pec@ifpug.org) with your suggestions for topics and speakers. If you are interested in working with the PEC, please complete and send a volunteer form to [pec@ifpug.org](mailto:pec@ifpug.org).

## COMMUNICATIONS AND MARKETING COMMITTEE

By Julián Gómez

It is always a pleasure to start giving thanks to a person. I want to start saying thank you to Joe Schofield for the great work as MetricViews editor. We had a challenge to publish this new issue in a very short time and with the Joe's guidance, we succeeded.

Furthermore, I want to say thank you to the authors that contribute issue after issue with their work to help to the community with their knowledge. That is volunteer work that is not always appreciated as much as it deserves. Thank you, authors.

We need more volunteers to help our community. I am a firm believer that a strong community makes all of us better, those that receive and those that give.

A long time ago I heard this sentence, “If you have an apple and I have another apple. We share them. Then you have an apple and I have an apple. But if you have an idea and I have another idea. We share them. Then you have two ideas and I have two ideas.”

Keep this sentence in mind the next time you have the opportunity to volunteer with our community. Your participation is very important, because your participation make us stronger.

With more people engaged in our community, we can do more and better things.

## NON-FUNCTIONAL SIZING STANDARDS COMMITTEE

By Fabrizio Di Cola

We are working on several tasks to affect continuous improvement of the understanding and applicability of the SNAP methodology within the industry.

We support the Certification Committee in defining the CSS exam, which is an enabling step to have a certification extension process similar to that for CFPS. We updated a previously delivered one-day SNAP workshop to include new SNAP technology. This presentation can be used to help people prepare for the SNAP certification. We also prepared a presentation addressing SNAP APM Subcategory “1.2 Logical and Mathematical Operations,” which can be used for certification credits.

We put into our roadmap some activities that will try to improve visibility for using the SNAP methodology together with function points to allow those companies that have not yet adopted SNAP

to perceive the advantage of using both metrics jointly. We are working with the Communications and Marketing Committee and the Partnerships & Events Committee to achieve this goal.

We are working on white papers that will help to define different counting scenarios with SNAP and the relationship between SNAP and function points. The concept of the “partition” is important to SNAP, and the white paper “Boundaries and Partitions” is a document that clarifies the relationship between these two important counting elements and what influences them. This white paper was a joint effort between us and the Functional Sizing Standards Committee. This white paper either is in the IFPUG store or will be shortly. We encourage SNAP counters to use this and other SNAP-related white papers in conjunction with the APM when performing SNAP counts.

We are also involved in the Simple Function Point Task Force for anything that falls under the responsibility of our committee.

Last, but definitely not least, a welcome to new members Dr. Micheline Al Harrack, Marcelo Leme, Manjusha Misra, Marcello Sgamma and Daniele Zottarel.

## INTERNATIONAL MEMBERSHIP COMMITTEE

By Loami Barros

The International Membership Committee (IMC) is looking for an enthusiastic Brazilian country representative who will replace Loami. IFPUG members from Brazil are invited to volunteer for this role.

The IMC is working on managing academics affairs. This task force will collaborate with universities and colleges around the world that use Software Estimations/Function Points in their curriculum.

The IMC has been providing support to simplify Function Points and helping with the translation process.

The IMC has been acting as the primary contact point for all IFPUG-related queries and engages IFPUG members so that they continue to benefit from their memberships. We are more than eager to assist you with all IFPUG-related queries. Currently, we have representatives for France, Spain, Brazil, China, Italy, France and Malaysia may be a country representative too!

## BUSINESS APPLICATIONS COMMITTEE

By Pierre Almén

The Business Applications Committee (BAC)'s main purpose is to contribute to C-level and management decision-making using a quantitative approach.

We are very glad to announce that we recently got a new member, IFPUG Past President Christine Green, and a volunteer, Tom van Dée from the Netherlands, and we now have eight people on the committee.

We have been focusing on the following tasks:

- Creating an article about the new IFPUG Application & Maintenance (AD&M) Benchmarking Certification for this edition of MetricViews
- The mission for the BAC
- Marketing the IFPUG AD&M Benchmarking Certification
- Marketing the new report “Analytics of the International Software Benchmarking Standards Group (ISBSG) Development and Enhancement Repository”
  - o This report is free of charge for all IFPUG members and can be downloaded through the IFPUG Online Store
- Preparing the April 29 Knowledge Café webinar presentation on the IFPUG AD&M Benchmarking Certification
- Preparing an internal IFPUG AD&M Benchmarking Certification training for all BAC members
- Investigating if we can create a new updated version of the document “Function Points as Assets – Reporting to Management”

If you are interested in joining the BAC or have questions, email [ifpug@ifpug.org](mailto:ifpug@ifpug.org).



**IFPUG**  
International **Function** Point  
USERS GROUP

191 Clarksville Road  
Princeton Junction, NJ 08550 USA

Contact IFPUG Headquarters at +1-609-799-4900  
or [ifpug@ifpug.org](mailto:ifpug@ifpug.org).