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CONQUERING THE ESTIMATION CHALLENGE

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IN THIS EDITION

This edition of *MetricViews* centers around one common theme – estimation. There is no magic to the process of estimating, just the application of using good data and, of course, common sense.

Carol Dekkers and Joe Madden start us off with ways to improve your estimates based on a FP sampling approach. With a focus on the business side of things Amit Javadekar reminds us of the impact accurate estimating has on winning new business deals. Continuing on, Dan Horvath provides his insights and experience on how to establish a consistent, efficient and effective estimating process by establishing a Project Initiation Center of Excellence. In their article on 'Why Can't we Estimate Better' Herron and Dennis combine their collective wisdom to discuss some common pitfalls along with some practical approaches. Frank Vogelesang reminds us that making the right decisions depends on having the right measures. And Marcus Mello keeps us on our toes by giving us some 'Homework' to consider.

Also included are the interesting and up to date committee reports and the always insightful view from the top, a message from our President Tom Cagley.

And finally, we have re-printed the lovely tribute to our dear friend and colleague, David Thompson.

In our estimation we think you will enjoy this edition of *MetricViews*.



Message from the President

Tom Cagley

Usage of IFPUG function points and SNAP continues to grow and change. For example, in the United States, government organizations are beginning to use IFPUG function points in agile sourcing contracts. This has begun to generate the need for more certified personnel. The expansion of the use of IFPUG metrics portends an exciting time for IFPUG members. Do you know someone that should be part of IFPUG? Invite a friend to join IFPUG or if you are an individual member talk your organization into joining!

In September 2016, we held an unconference in Baltimore. The day provided a great platform for sharing experiences using functional and non-functional metrics. Everyone that attended provided value to the attendees rather than the classic lecture format most conferences leverage. I left the unconference extremely pumped up. Unfortunately soon after the unconference David Thompson, chair of the Communication and Marketing Committee died of a stroke. I miss David and I recommend you read the remembrance tribute in this *MetricViews*.

IFPUG is an association powered by volunteers. Each committee has accomplished great things in 2016 but has a backlog of work that they would like to accomplish. The "however" that goes with that statement is that many committees are looking for volunteers. Check out the IFPUG Website to find out how to volunteer. As a member I always want IFPUG to provide more value to membership. Excellent examples of this include the new Workflow

(continued on next page)

(President's Message, continued from page 2)

Whitepaper, *Integrating Procedures for Function Point Analysis and the Software Non-functional Assessment Process (SNAP) Parts 1 and 2*, the Baltimore Unconference, support for the upcoming conference in Mumbai (delivered with CSI), *MetricsViews*, and the Country Representatives. These only scratch the surface of the activities that IFPUG members participate in delivering to other members. If you want more, our committees are always looking for new volunteers.

I look forward to meeting and talking with as many members as possible. I will be running another set of Virtual Coffees in early 2017; I will be at the conference in Mumbai, and at other events throughout the year. If you want to talk, my skype id is thomas.cagley.jr (just let me know you are an IFPUG member). Let's talk!

Tom Cagley
IFPUG President



From the Editor's Desk

David Herron

Why isn't every organization and software provider using a sizing measure, such as Function Points, to improve their decision making capability and ultimately to deliver a better software product. Certainly, those of us that have had any practical experience applying a sizing metric to a particular problem domain have learned and realized the value of an effective sizing technique. We are the enlightened

ones. But 'we' are also in the minority. You don't see many enterprise wide initiatives that are deploying FPA or other sizing techniques as part of a robust measurement program. There are exceptions but they are certainly not the rule.

It is frustrating to know that something works. That something can make things better, but in the end, it goes unused or unappreciated. The key to reversing this trend is to find a better and more impactful way to deliver the message. And that message has to be about the value software sizing brings to the business.

If we want our senior leaders to invest in a sizing-centric measurement program we have to be able to demonstrate a return on that investment. There has to be a value-add component before we can expect management to take notice. How that gets defined and articulated will be different for different organizations. Our job will be to learn and to speak the language of the business. And then to make the connection, not directly to sizing but to the value of the information being generated from the collected and analyzed measurements that ultimately provides useful information to the decision making process.

Management needs to be in a better position to make better decisions. We have the tools that can help them do that. Selling them function points isn't the single answer. We need to sell them information in the form of quantifiable data that they can use to manage the business.

David Herron
Communications and Marketing Committee



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#IYSM

INTERNATIONAL YEAR OF SOFTWARE MEASUREMENT

IFPUG 1987-2017

Software size measurement - the common denominator for managing software projects.

January 27, 2017

IFPUG Headquarters, Princeton Junction, NJ

For further information contact: Carol Dekkers, CFPS, PMP IFPUG Director of Communications and Marketing Email IYSM@ifpug.org

FOR IMMEDIATE RELEASE

In commemoration of the International Function Point Users Group (IFPUG) 30th anniversary in 2017, the IFPUG Board of Directors proclaims 2017 as the **International Year of Software Measurement. (#IYSM.)**

Through special publications, workshops, mainstream articles, conference presentations, software tools, infographics and other media, we invite the world to embrace functional and non-functional software size measurement (with Function Points and SNAP Points) - and elevate the practice of software metrics to a global main stage.

We cordially invite all of our certified IFPUG members (Certified Function Point Specialists - CFPS, Certified Function Point Practitioners - CFPP, and Certified SNAP Practitioners - CSP,) software measurement practitioners, program and project managers, cost estimators, tool vendors, quality assurance specialists, software users, statisticians, project performance bench markers, risk management professionals, software customers, and all other interested parties for whom software holds value, to join us by sharing knowledge, hosting events, and increasing the professionalism of software measurement worldwide.

Visit www.ifpug.org/2017-international-year-of-software-measurement for more details and for up-to-date events, publications, related information and references to learn more about this exciting year and the plans that lie ahead.

Remembering our Friend and Colleague David Thompson

1940 – 2016



On September 22, 2016, our friend David Thompson died suddenly of a stroke. David was a pillar of the IFPUG community, most recently serving as the Chair of the Communications and Marketing

Committee. David may well have been the first person in the IFPUG community to introduce himself to me, that was just the kind of person he was. David engaged with everyone around him spreading thoughtfulness and joy. The shock of David's death was brought into sharper

(continued on next page)

(Remembering David Thompson, continued from page 4)

focus because many of us had just been with David a few days earlier at IFPUG's unConference in Baltimore. I have several pictures of David at the unconference actively participating. My memories of David are not constrained to this final conference. David was both a personal friend and colleague in our day jobs. Writing even this small announcement has been hard and serves to remind me to embrace my own mortality. While recognizing David, I believe it is important to remember to be present and embrace life just like David! I have received several quotes from many others including Antonio Ferre. Antonio compiled the following testaments to David:

Perhaps the words that more arise to my mind, with a lot of sadness are "Thanks, David", Thanks for his "savoir-faire", thanks for his discretion, talent and diplomacy in his words, honesty, and professionalism. Thanks for sharing with each of us those great values. Everyone that worked with David has shared many positive and sincere praises about who he was as a person, both professionally and personally. In the weeks since his passing, I have read sincere words written by different IFPUG members: "He was truly one of the nicest people I have ever met and worked with", "He will be greatly missed; we were all blessed to have been in his circle", "He was a great leader and so diplomatic and just so dang nice in every way", "David was a mainstay of the IFPUG and was always great to talk with. He will be missed", "David was one of the kindest people that I have ever known", "I cannot think of a time (not ever) when I have heard him say something negative to someone or about someone", "He was always supportive and encouraging of the work being done by the various IFPUG Committees", "He was such a wonderful person and such a treasure for IFPUG", "I feel as though I have so few words for my sadness at David's passing", ...



Commodore David Thompson

After reading the Denver Sail Association sad news "Denver Sailing Loses a Great Friend and Leader ... I am also proud to say he was a close friend of mine. He is sorely missed", those words written by Bill Cabrall reflect this savoir-faire as a way of life. Those same words can be used, almost without changing a comma, to the IFPUG as "The International Function Point Users Group loses a great friend and leader ..." Be sure that we have indeed lost a great friend and leader. I feel a great and deep sadness, but on the other hand, I would like to say as I mentioned above, I am so grateful to have been given the opportunity to know and to work with David. In my case (Antonio) it has been an "honor" and a great joy to work with David.

Finally, if I were to communicate with David I would tell him that I hoped he would be sailing with the wind for eternity.

Thomas M Cagley Jr.
IFPUG President
November 2016



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Q/P Management Group, Inc. has been a leading provider of software measurement, benchmarking, quality and productivity consulting services for over 25 years. Q/P offers a wide range of software measurement related training, including certified introductory and advanced function point analysis training as well as IFPUG certified SNAP training.

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Q/P also offers the Software Measurement, Reporting and Estimating tool, SMRe. SMRe users can generate software development estimates using proven estimating techniques along with historical and/or industry benchmark data. SMRe captures, reports and compares project performance against historical and/or industry benchmark data.

Visit our website, www.QPMG.com for details about our services and product offerings.

FP Sampling Holds Promise for Software Metrics

by Carol Dekkers, CFPS Fellow, PMP and Joe Madden, PMP

Abstract

As we embark on a new year 2017, which is also the 30th anniversary of IFPUG Bylaws, there are reports that the software development industry is making progress. The 2015 Standish Group CHAOS report cited that agile projects are, on average, 3x more likely to be successful than waterfall projects (based on their survey of over 10,000 projects.)

The not-so-good news, however, is that the % of successful projects (defined as on-time, on-budget, and with a satisfactory result) hasn't changed much since the first CHAOS report in 1996, and hovers around 40%. The top 3 success factors in the 2015 report were not technical: 1. Executive Support, 2. Emotional Maturity and 3. User Involvement (Agile processes ranked #7.)

The need for software sizing measures to support project estimating remains just as critical as it was 30 years ago, yet IFPUG function points are not used as extensively as they could be to support software sizing. Rather than "throwing the baby out with the bathwater," so to speak, or creating new metrics to solve old problems, the authors suggest a new way to repurpose FP to achieve estimating successes today.

Introduction

As we embark on a new year 2017 which is also the 30th anniversary of IFPUG Bylaws, the software development industry is making progress. The 2015 Standish Group CHAOS report shows that in a survey of over 10K software development projects, those using agile techniques are, on average, 3x more likely to be successful than waterfall projects. The not-so-good news, however, is that the overall number of successful projects (defined as on-time, on-budget and with a satisfactory result) still remains over the past 21 years of CHAOS Reports at just under 40% of projects. The top 3 success factors in the 2015 report were not technical: 1. Executive Support, 2. Emotional Maturity and 3. User Involvement (Agile processes ranked #7.)

"On-time, on-budget and with a satisfactory result" is directly tied to the effectiveness of the estimation process. To increase the number of projects that are "on-time, on-budget and with a satisfactory result," we need to get better at estimating and managing customer expectations about those estimates.

As the sidebar, Software Sizing Infographic by QSM, illustrates, an ignorance of software size leads to bad estimates. All estimation approaches, whether role-based, task-based or scope-based (i.e. using a parametric tool like SLIM®

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(FP Sampling, continued from page 6)

or COCOMO®), require an explicit or implicit understanding of what you are going to build in order to be effective. Supporters of the ISO standardized IFPUG function points (FP) know that this is where our measures can play a major role, but this unfortunately is not (yet) a universally accepted fact in the IT industry.

The Challenges with Function Points

Although the IFPUG counting rules have stabilized in the past 10 years and become an ISO standard (a good thing!), function points today face an uphill battle. The biggest users of FP do so contractually (Brazil and Italy boast the largest number of IFPUG members due to governmental regulations requiring FP.) Companies in the U.S., when introduced to function points, either have never heard of it (common) or reject the notion of using them outright based on past negative experiences with the measure.

Past negative experiences or a reluctance to try FP for the first time is often due to the fact that IFPUG FPA can be time consuming and labor intensive and requires highly specialized knowledge of FPA. Other popular sizing methods, such as counting agile story points or source lines of code, require less time and effort, but lack any agreed upon standard. Because each project team can have its own definition of story points, it is difficult to do any meaningful comparison between projects or to leverage historical data.

So how can we leverage the robustness of an ISO standard without making it too time consuming and labor intensive?

Overcoming FP Challenges — Early and Quick High Level Project Sizing Using FP Sampling

One way to overcome the challenges of using FP described above is to use it “behind the scenes” on a limited basis to do FP sampling of countable artifacts (e.g. use cases, user stories, etc.) to

derive a gearing or conversion factor. The Software Sizing Infographic by QSM provides a list of the most common artifacts that can be normalized to FP (see sidebar.) This helps overcome resistance to function points by describing functionality in units a given organization and culture can understand (e.g. agile user stories) that can be translated into estimated FP behind the scenes as an input to a parametric estimating tool such as SLIM® or COCOMO®.

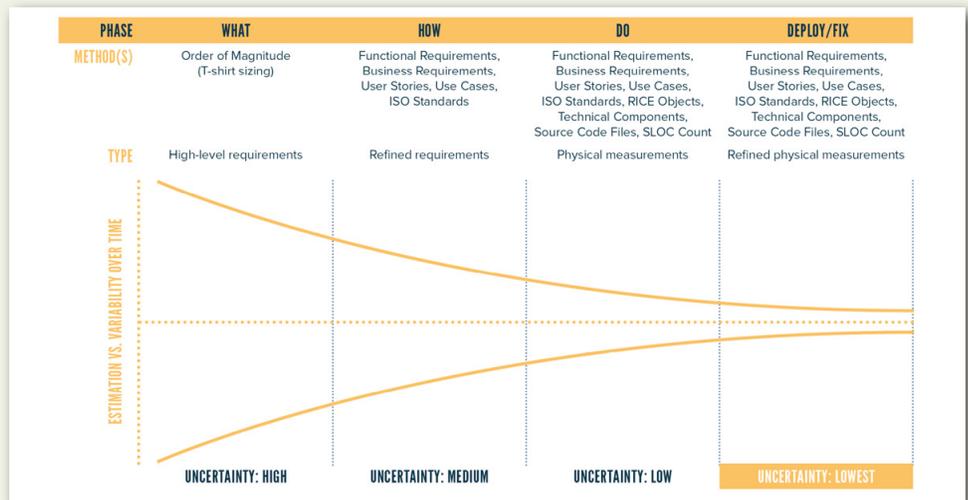
Early estimates are needed long before a project even becomes a project, when it is still an idea or concept in the making. Executives have discussions about affordability (is it within the realm of possibility in terms of cost,) resources (do we have the right people to even attempt it) and schedule (what will we have to set aside and for how long to get this done?) At this point in time, little is known aside from preliminary functions (it’s going to revolutionize customer service, for example) and certainly not enough to do a detailed FP count. As figure 1 below indicates, the cone of uncertainty is high when you are early in the software development life cycle (SDLC). Nonetheless, an estimate is often needed to support bids and corporate planning. This is where using gearing factors to approximate the number of FP based on a count of available artifacts can provide value.

The cone of uncertainty (fig 1) is a widely accepted concept and can be used to set expectations with stakeholders for estimates performed at various stages of the SDLC. At each stage of the SDLC, FP sampling can be used to establish gearing factors for whatever requirements artifacts are available at that point in time.

The benefits of a sampling approach to FP counting include:

- a. Less time consuming and labor intensive (a representative sample of high level requirements are taken);
- b. Can be done “behind the scenes” in organizations that are adverse to, or do not understand, FP counting and the resultant numbers are expressed in more acceptable units-of-measure and
- c. Usually there is something countable like business requirements, use cases or user stories where you can establish a gearing factor (i.e. ratio)

How big should the sample size be? Even a small sample size can provide some value in approximating the gearing factor for various artifacts. However, for a more robust gearing factor, expert statistician and Certified Six Sigma Black Belt (CSSBB) Paul Below recommends a sample size of at least 12.



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(FP Sampling, continued from page 7)

Let's include an example here. The goal in this example is to use FP sampling to establish gearing factors for both use cases and user stories for Company X who develops educational software for colleges and universities. The Course Registration System project is considered a representative example of the types of projects developed by company X. A sample of 8 use cases and 35 user stories is chosen. Company X defines a user story as a thread of functionality within a use case (a.k.a. use case scenario or flow). The details of the use cases and user stories are based on the Course Registration System case study on page 483 of the IT Measurement Compendium. The FP counts were performed by an IFPUG Certified Function Point Specialist (CFPS.)

Project Name	Use Cases	User Stories	IFPUG Function Points	User Stories per Use Case	FP per User Story	FP per Use Case
Course Registration System	8	35	108	4	3	14

Now that we have some gearing factors, we can quickly ballpark the number of function points for future estimates and analyses. For example, if you are describing a new project as "about 20 use cases," you know that it is approximately 280 function points. You can then input that size assumption (280 function points), along with size uncertainty (based on where you are in the SDLC vs. the cone of uncertainty) into a parametric tool like SLIM® to determine the feasibility of developing and delivering that functionality within a given budget and schedule.

Using the FP sampling approach is one way to improve how we size projects and increase the robustness of our software estimates. The better are the estimates, the better will be the on-time, on-budget, and with a satisfactory result, project successes.

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About the author:

Carol Dekkers, CFPS (Fellow), PMP, serves as the IFPUG Director of Communications and Marketing, and is a senior consultant and instructor with Quantitative Software Management (QSM), Inc. and President of Quality Plus Technologies, Inc. Her career spans more than two decades with international expertise and experience in software metrics; functional size measurement (function points); project and program management; software estimation; software measurement program design and implementation; and ISO standards. She is a published author of *Function Points: Tools for Project Management Metrics*; the co-author of half a dozen industry textbooks including: *The IT Measurement Compendium: Estimating and Benchmarking Success with Functional Size Measurement*; *IT Measurement: Practical Advice from the Experts*; *Program Management Toolkit for Software and Systems Development*; *Practical Project Estimation*; *Fundamental Concepts for the Software Quality Engineer, Volume 2*; *The IFPUG Guide to IT and Software Measurement*; and others; a frequent contributor to the QSM blog and the *MusingsAboutSoftwareDevelopment*. *WordPress.com* blog; and the author of over 100 published journal articles. Carol holds a BSc in Mechanical Engineering from the University of Calgary.



(continued on next page)

(FP Sampling, continued from page 8)

Joe Madden, PMP, is Vice President of Professional Services, Quantitative Software Management, (QSM) Inc. and currently



leads their management consulting division which offers a wide range of professional services to clients in both the public and private sector. Joe has more than 25 years of experience in IT management and consulting. This includes nearly seven years as an officer in the U.S. Air Force and 10 years with consulting firms KPMG and BearingPoint. At those firms, he led many high-visibility projects and played a key role in successful SW-CMM and CMMI process improvement efforts. Joe is a graduate of the Yale School of Management Strategic Leadership Workshop, holds a M.S. in Software Systems Engineering from George Mason University and a B.S. in Computer Science from Marquette University.

SOFTWARE SIZE MATTERS

WHY DO WE CARE ABOUT SOFTWARE SIZE?

Ignorance of size leads to bad estimates.

Without software size, it's hard to estimate:

- How long a software project will take
- How much it will cost
- How many people we'll need
- How many defects we can expect to find during testing
- How productive we are likely to be

WR! Because there's a non-linear relationship between size and schedule, effort (cost), and defects.

ESTIMATING SIZE IS EASY, RIGHT?

Unfortunately, no.

Estimators need to use different sizing methods, depending on where the project is in the cycle, and what information is available.

Broadly, we can divide the software lifecycle into four stages:

- INIT** (Initiation)
- DEV** (Development)
- DE** (Deployment)
- DEP/OPS** (Deployment/Operations)

If we were building a house, those phases might correspond to:

- INIT:** Drawing an initial sketch
- DEV:** Creating detailed blueprints
- DE:** Physically building the structure
- DEP/OPS:** Handing over keys and warranty period

At each stage, we're able to estimate size at less steps, and with greater clarity – sometimes referred to as “**TECHNICAL CLARITY**”.

KEY TAKEAWAY: Since we're using different sizing methods together, we'll need a way to normalize or convert to a common measurement unit. This is important because it allows for cross-comparisons across different technologies, projects, industries and organizations.

For **FUNCTIONAL SIZE**, we can convert all our measurements into basic units called **FUNCTION POINTS**. (The International Function Point Basic Count (IFPUG) method is the most widely used ISO standard for functional sizing.)

For **TECHNICAL SIZE**, we can convert all our measurements into basic units called **IMPLEMENTATION UNITS**. An IU is equivalent to writing one source line of code or one technical step in configuring a commercial package (COTS) package.

FUNCTION POINTS can be converted to **IMPLEMENTATION UNITS** using QSM's Function Point Languages Table: www.qsm.com/function-point-table.

WHAT ARE THE MOST COMMON SIZING METHODS?

Order of magnitude size (T-shirt sizing)

Functional Size (normalized to FUNCTION POINTS, then to IMPLEMENTATION UNITS)

Technical Size (normalized to IMPLEMENTATION UNITS)

Now let's look at the whole process

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Critical Success Factors for Estimation Capability Improvement

by Amit Arun Javadekar

In the present economic scenario, most IT service providers are grappling with the challenge of growing their businesses. Their ability to win new deals depends not just on the technical solution being proposed but also on the cost of implementing that solution. Developing and continuously improving the ability to estimate costs as accurately as possible is therefore critical to winning new deals. This article highlights the critical elements that need to be implemented in order to develop a culture of scientific and standardized estimation in IT organizations.

The Estimation Ecosystem

Estimation capability depends on several factors that need to be made available in an integrated manner to the estimator community. These are:

Availability of Standard Estimation Models

In order to create estimates that are less person-dependent and more repeatable it is essential to have standard estimation models for different service lines like Application Development, Infrastructure Management, Package Implementation etc. While industry standard models like Function Points or Use Case Points are widely used for estimating Application Development and Enhancement work, they have limited use in services lines such as Application Production Support, Infrastructure Management, Application Migration etc. For such services it is essential to create organization specific estimation models that can serve as standard estimation models for all work being executed as part of such services.

Ensuring the availability of standard estimation models for each type of service being provided by the organization will help reduce the dependence on individual estimators, reduce biases and ensure that consistent estimates are produced for a given type of work.

Access to Training and Certification Programs

It has been observed that while most project managers and estimators are comfortable with the concepts of project effort, duration and cost the concept of size is still misunderstood by many. Frequently size is confused with effort. It is vital that all estimators are clear about the basic concepts of software estimation, the measures and metrics involved and the standard estimation (i.e. Size Effort Duration Cost) and review process to be followed. Along with standard estimation models it is also essential to have people who are skilled in using them and are clear about the applicability and limitations of the models involved.

Hence the right training programs need to be deployed to increase the estimation competency of all roles involved in project and proposal estimation. These training programs can be split into Basic and Advanced levels and can be delivered as interactive classroom sessions or webinars and also use technology driven e-learning sessions for greater reach and scalability. Certification programs can also be implemented to identify estimation experts who can help support estimation activities across the organization. These certifications could either be method specific like the IFPUG CFPS or bespoke organization specific ones that cover various types of estimation approaches and methods.

(continued on next page)



(Critical Success Factors, continued from page 10)

Defined Metrics, Baselines and Goals

Project estimates are typically based on past data and experience. Almost all organizations practice analogy based estimation approaches in some form or the other. While lower maturity organizations base it on pure experience, higher maturity ones base it on data that reflects the experience. Thus defining the right set of metrics that are useful for estimation purposes is quite important. The tracking of these metrics through baselines at the right level (i.e. account level baseline v/s business unit level baseline v/s organization wide baseline) is equally important so that estimators have access to metrics data that closely reflects the type of work being estimated.

All this data only reflects past capabilities and estimates based on that are no guarantee to winning new deals. Instead the metrics used during estimation should also be based on future goals that the organization plans to achieve e.g. effort estimates derived from productivity goals instead of past productivity achieved would be more useful in winning new deals. It is crucial that these goals are based on solid, achievable plans or the risk of execution failure is high. Thus availability of past as well as projected metrics data is essential to making informed decisions on how the metrics data is to be used during estimation.

Globally Distributed Knowledge Clusters

Most large IT service providers are engaged in estimating hundreds of projects and proposals on a daily basis. The knowledge of estimation therefore needs to be made available across the

organization. Estimating projects and proposals requires not just an understanding of estimation principles but also good knowledge of the client's business and the industry in which they operate. It is therefore necessary to create Knowledge Clusters in each business unit to provide local estimation support. These Knowledge Clusters can be virtual teams consisting of certified estimation specialists with proven estimation competency. In addition to their normal duties these individuals would also participate in estimate reviews, conduct training sessions, participate in client discussions and presentations, help analyze project metrics and improve the estimation process at the business unit level. They would also provide virtual Help Desk support by responding to estimation related queries originating in their respective business units.

Availability of these Knowledge Clusters would greatly strengthen the deal pursuit process as estimation experts can be involved proactively at the proposal stage to advise the pursuit team regarding the estimation process (e.g. models and metrics data to be used) to be followed on a deal by deal basis.

Estimation Portal

The estimation portal is the one-stop-shop for all estimation needs of the organization. It is the common area from which all estimation knowledge can be accessed. It hosts the repository of estimation tools, training artifacts, case studies, client presentations, white papers on estimation etc. It also provides contact details of estimation specialists across the organization who can be contacted for expert support. The

estimation portal may also support online discussion forums where estimation topics can be discussed, best practices shared, questions asked and answered.

In conclusion it can be said that a robust estimation strategy incorporating the critical success factors described above needs to be devised and implemented as an organization wide change management program. As with all change management initiatives active participation and support from the senior management is crucial in ensuring that the objective of improving estimation capability is indeed being met.

About the author:

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at Infosys Limited. He has 22 years of international experience in the Information Technology industry. Amit has lead organization-wide change management programs, software development projects, people development and process standardization initiatives. He has published numerous articles on software estimation and sizing in leading industry journals and also speaks regularly at industry forums. Amit holds a Masters degree in Computer Science and is an alumnus of the INSEAD School of Business. His areas of interest include usage of artificial intelligence in estimation and SNAP for sizing corrective maintenance.

Getting your Projects off to a Good Start Using a Project Initiation Center of Excellence

by Dan Horvath

What is a Center of Excellence, and why have one for Initiation?

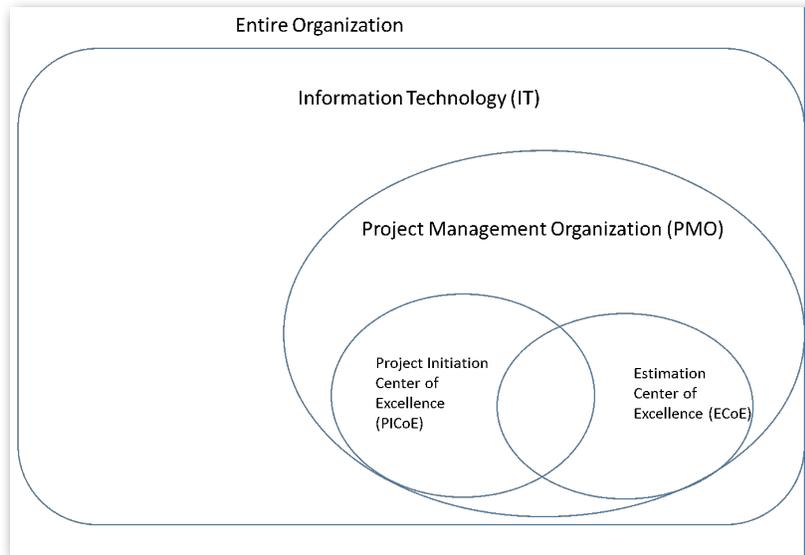
Are your organization's IT Projects overrunning their budgets, or even failing outright more often than you would like? Moreover, are you entirely sure that you are undertaking the right projects at the right times to provide maximum benefit, considering your limited resources? Perhaps if your projects were initially defined with more scrutiny, discipline and rigor, they would be able to proceed through execution with optimum speed and efficiency to be most effective in reaching project and organizational goals. A Project Initiation Center of Excellence can help.

A Center of Excellence (CoE) may be defined as a group of subject matter experts that provides support, leadership, best practices and training for a given sphere of influence inside or outside an organization. A CoE may also be known as a Capability Center or Competency Center. Use of the CoE abbreviation / catchphrase is gaining traction, and there is a great deal of buzz about it in several realms these days. The Information Technology (IT) world, including and especially the areas of Software Metrics and Project Management, have eagerly adopted the term.

Within IT, there may be CoEs for the Project Management Office / Organization (PMO), and possibly for several areas of agile development, as well as other organizations. Within the PMO, there may also be a CoE for Project Estimation.

An Estimation Center of Excellence (ECoE) consists of a team subject matter experts versed in all aspects of project metrics and estimation. This team provides guidance, leadership and best practices, in order to provide reliable and effective estimation throughout the project Software Development Life Cycle (SDLC). In practice, the PMO determines that ongoing IT development activities require ongoing estimation support, and the ECoE provides that support.

A PMO provides the Project Management team and expertise required to manage the projects, but it also provides several project related services as well. These services are defined by business processes, and include resource allocation, governance and oversight of projects, staffing support, as well as the estimation that may be provided by the ECoE.



Schematic view of the PICoE within the organization

Regardless of whether an ECoE exists, how does IT or the Business determine which projects should move forward to begin with, and how does it determine their scope? Will resources be available? Are there assumptions, dependencies, constraints and/or risks? These questions are often answered during the High Level Planning phase of the Software Development Life Cycle (SDLC). Unfortunately, by that point the project is already somewhat underway, with at least some resources and effort committed. Ideally, the project scope, resource requirements and especially the estimated cost would have already been determined before the project got this far.

Enter a Project Initiation Center of Excellence (PICoE, also known as ICoE).

What does a PICoE do?

The primary function of a PICoE is to ensure that projects are defined, estimated, prioritized and slotted for execution. In other words, off to a good start. This is accomplished by a rigorous examination of the creation of a Business Case, and an even more rigorous approach to the creation of an initial

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project estimate. That assessment is known as a Rough Order of Magnitude (ROM) estimate.

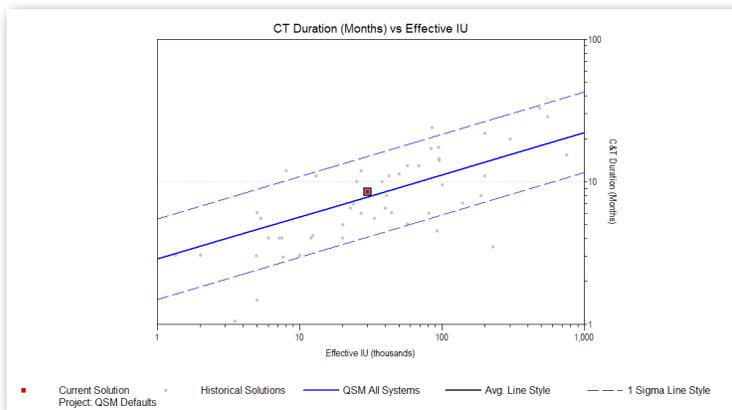
The Business Case contains all of the information required to produce the ROM and to help the organizational governance team determine whether and when to move the project on to its High Level Planning phase of the SDLC. At a minimum, Business Case contains the following:

- A narrative explaining the goals of the project
- A list of items that are in and out of scope
- Lists of risks, dependencies, constraints and assumptions
- Architectural options
- A summary of the ROM Estimate

The PICoE subject matter experts assist and guide the project initiators (those who requested the project) through the course of developing the Business Case, using a predefined business process. A project manager may or may not be included with this Initiation team. If not, one is assigned once Initiation is completed. As the Business Case nears completion, estimation begins.

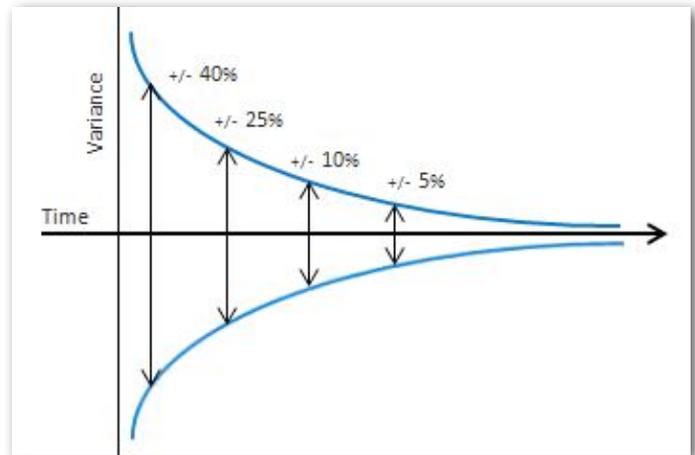
The ROM may be produced by PICoE subject matter experts, or by members of the ECoE working closely with the PICoE. The PICoE team as well as all Project Initiators share the responsibility for the ROM. The Initiators provide essential input. Estimation is based on size, within the context of project history.

Of course the determination of project size this early in the project life cycle may be difficult. Functional sizing estimation methods should be employed as much as possible. The more that is known about the desired end-state functionality, the better. Where less is known, other top-down estimation methodology, such as component sizing can help.



Construction and Test phase Duration vs Size in Implementation Units (geared from other sizing metrics)

The ROM is the initial estimate for the project. Because so little is known at this point, it can only be completed using top-down methods. Estimation will also occur after High Level Planning is complete, and then again as the Construction phase is about to begin. These will be bottom-up estimates. As the project proceeds through the SDLC, more is known at each estimation point. We therefore expect the estimates to become more accurate as time goes on.



Cone of Uncertainty, showing that estimates are expected to improve as the projects progress through time. The accuracy of the ROM time or duration estimate, taken at the earliest point on the project timeline, may be off by as much as 40% in this example. Some cones do not expect even this much accuracy for the ROM.

Like all estimates, the ROM is a prediction about the cost and schedule of the project. Organizational goals (such as durations within certain ranges) may be applied, but should be tempered with project historical data. In fact, project history is an excellent prediction mechanism for all estimation, especially the ROM. The overall ROM may consist of the following metrics:

- Effort – overall and by phase
- Duration – overall and by phase
- Staffing, in terms of number of full-time resources
- Initial schedule and staffing plan
- Defect prediction
- Predicted productivity level

Once the ROM is complete and accepted by the Project Initiators and Sponsors, the information is summarized to complete the Business Case, and the ROM details and the Business Case itself are published, in order to complete the Initiation process. The next step is governance approval, followed by High Level Planning, and then Project Execution.

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(Project Initiation, continued from page 13)

How to Stand up a PICoE for Your Organization

The steps required to stand up a PICoE may require a project in itself. A list of some of the steps to create and then begin use of a PICoE follow, but just as the PICoE itself must be tailored to each organization, the steps to stand one up should be tailored as necessary as well.

Obtain direction and authority – Without proper organizational authority, a PICoE will fail. Without direction, it will certainly flounder. The authority needs to come from the top of Information Technology, and it must also have the support of the Business. A steering committee, or team to provide ongoing guidance and direction will be of enormous help.

Create mission statement – The creation of a mission statement is one of the early steps. A complete and accurate mission statement will guide the Initiation subject matter experts as well as the steering committee.

Define and state goals – A decision about which, if not all, projects to be brought forth through the Initiation Process needs to be stated. If there are exceptions, the criteria needs to be clearly defined.

Define process – The Initiation process itself must be clearly defined. The PICoE guides and drives projects into High Level Planning by following the Initiation Process.

Staffing the PICoE - The best Business, Estimation and Project Management practitioners should be included. As noted, they must be provided with the proper authority.

Train Initiation clients – The PICoE should provide training for all potential users of its services.

Roll out the process – A roll-out plan should be developed by the PICoE team as soon as it is formed. The plan should be reviewed and approved by the Steering Committee.

Maintain and adjust – Flexibility is important. Some adjustments to the process, and even the roles and responsibilities will be necessary along the way. Change happens.

Publish success stories and statistics – A critical success factor for the PICoE will be whether it is viewed as an organizational success. Being transparent about successes and failures is important. The metrics should be published for all to see, but it will help to call out specific success stories.

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About the author:

Dan Horvath is a Project Planning Analyst at Progressive Insurance. In this capacity, he facilitates project benchmarking, performs data analysis, and produces project estimates based on assessments, analysis and historical data. Dan has a background in application development, project management and software metrics, including function point analysis. He has written articles, taught courses, and presented papers on functional sizing and metrics, including ISMA⁷ and ISMA¹⁰. Prior to joining Progressive, Dan was a senior consultant at Q/P Management Group, and has also worked at Electronic Data Systems and General Electric. Dan maintains Certified Function Point Specialist and Project Management Professional credentials.



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Why Can't We Estimate Better?

by *David Herron & Sheila Dennis*
DCG Software Value

Software estimating has been an ongoing problem for programmers, project managers, and senior level IT managers. Like most issues in IT, there are a number of perspectives on the topic of estimating. Most organizations consider their estimating practices to be ineffective and they have no real sense of how to make it better. However, if an IT organization is serious about improving their estimating practices and they want to estimate more effectively there are solutions available.

Different Perspectives

The first step towards improving is to recognize there is a problem. When it comes to IT organizations and their estimating practices there are different views on how they assess the effectiveness and importance of estimating. Generally speaking there are three perspectives that IT organizations have with regard to estimating.

Estimating isn't a problem

First we have the organization that doesn't view estimating as a problem or has deemed it an insoluble problem. For example - During the development lifecycle milestones are monitored for schedule and budget compliance. Often times when there are slippages in the schedule or cost overruns the issues are addressed and new milestone schedules are created. Upon delivery of the software, if it is significantly late or over budget then a post-implementation review is conducted. Experience shows that at this point in the lifecycle factors contributing to missed schedules and/or budget overruns can be numerous; e.g., the schedule was unrealistic to begin with, the users didn't know what they wanted, the project team didn't have the right resources, etc. In this case we seldom hear anyone identifying the organizations inability to estimate properly as being one of the core problems to missed schedules and cost overruns. In this scenario, estimating simply isn't considered among the various problems attributed to poor delivery of software.

I want it delivered now

This dynamic shows itself, not so subtly, when management doesn't really want an estimate at all; they want the software delivered when they want it delivered.

How many times have we seen a situation where the sales/marketing group, or the business users or even our own senior management has requested a software solution that has a fixed delivery date already attached to it? And even though the user or senior manager may ask for an estimate they really aren't interested in the response unless they are told what they want to hear. This IT organization doesn't invest much time in their estimating practice because they don't see it as a vehicle to

properly manage the project and/or their customer's expectations.

We don't have time to get the estimate right

This third perspective involves an organization that wants to improve their estimating capability but they are not willing to make the investment it will take to actually make the improvements they need to their estimating model. The organization understands the value of properly estimating the project deliverables and they even understand at some level what it would take to do it right, but they simply don't want to make the investment necessary to achieve a higher level of estimating accuracy. They don't have the time or resources to get the estimate right, and yet they end up taking the time and resources to correct the problems resulting (in part) from a lack of properly estimating. Perhaps the next time they have a significant failure in regard to delayed schedules or cost overruns they should perform a cost analysis and prove to themselves that the investment to improve their estimating model is well worth the effort.

Positioning the Process of Estimating

All of the above perspectives represent different realities and, at some level, are understandable. The need to get the software out the door and into the hands of the customer is a very real demand of the business. Not wanting to invest the time to get the estimate right is a bit shortsighted; but the organization is most likely not aware of the cost of poor estimating. Or the IT organization is aware that their inability to properly estimate is a problem but it may be one of many problems they face and they may not be aware or have confidence that a solution is possible.

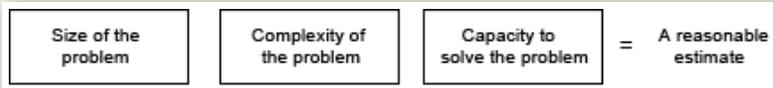
The process of estimating should be viewed as a means to managing customer and management's expectation not a black box magic process from which the perfect (or absolute) answer appears. For example, when traveling the airline estimates a time of arrival, or when contracting for a home repair the building contractor provides an estimate. Seldom is it expected that these estimates represent the final outcome. So too with software, an estimate is just that – an estimate. Estimating is a process that requires discipline, data and knowledge with regard to the expected outcomes. We need to reframe our thinking about estimating and view it as a vehicle to manage expectations based on best available information at that point in time. If a project ends up being late because the user changed the scope of work, or the project manager is called off to work on another project there is no way to produce an initial estimate that would have considered those unforeseen delays. However, once a change has been introduced it is perfectly reasonable, indeed essential, to re-estimate and to set expectations anew.

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The Estimating Model

The basic components of an estimating model are well defined and easy to understand. A software project estimating model is comprised of three components. In order to achieve a reasonable estimate the model needs to solve for the size of the problem, the complexity of the problem and the ability or capacity of the software development team to design, develop and deploy a satisfactory solution.



Within each of the three components there are a number of variables that are analyzed in order to create a reasonable value for that component. Additionally, the interrelationship among the components needs to be considered. The resulting estimating model can therefore become highly complex.

Each of these three components is required for any project that needs an estimate. Without a clear understanding of each of these pieces and how they fit together any attempt at creating a reasonable and responsible estimate will fall short.

Solving for this level of complexity can be a barrier for some IT organizations. It requires either an investment in a commercially available software estimating tool or an investment in developing the internal experience base necessary to compute a reasonable result.

Sizing the Problem

The most effective sizing technique used today for software is Function Point Analysis. Function Point Analysis (FPA) is an industry accepted sizing technique and has been adopted worldwide. The methodology 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. The advantages of FPA are: statistically demonstrable repeatability, speed of implementation, availability of expertise, etc.

The Function Point method is dependent upon the identification of five elements; inputs, outputs, inquiries, internal stores of data and external references to data. The definition of these elements is logical and therefore aligned to the users requirements. The next step in the methodology requires a detailed examination each of the individual elements to determine a 'true value' of its size. It is this step in the process that becomes time consuming and depending upon where you are in the development lifecycle it can be difficult to obtain all the necessary information required to properly size each individual element.

Other valid sizing techniques have been developed for particular circumstances. With good, disciplined design and implementation these can work effectively within the limited domain for which they were designed. However, this path

takes longer to design, implement and normalize than the "ready cooked" FPA.

Complexity and Capability

The complexity of a software problem is varied. The various estimating techniques and tools on the market today have a wide variety of complexity definitions. These may require analysis of such variables as logical and mathematical algorithms, data relationships, reusability, memory and performance requirements, code structures, etc. These variables and many others are certainly important and will affect the outcomes of your software solution. The difficulty is in determining what elements to evaluate and having a proper method for evaluating the selected elements.

IT organizations that are effectively estimating their software projects are using either a commercial software estimating tool or they have historical data that they use to develop an accurate set of algorithms to compute a complexity value.

Alternatively, you can develop a simplistic complexity evaluation method whereby you evaluate an appropriate list of complexity factors and assign an overall complexity measure of low, medium or high. Associated with each of the three designations would be a variable that you would apply to your estimating model. By doing this you have accomplished two things – you have raised the level of sensitivity regarding the complexity level in the software problem domain and secondly you are using a consistent method to create an estimate and based on the experience gained from actual outcomes you can adjust the complexity factor over time.

Solving for capability also requires the use of an automated tool or access to an internal or external data base of information regarding performance levels based on a variety of performance factors. These factors include data relating to the processes being used, the skill levels of the resources, tools and techniques available to the developers, etc. Such data bases are available commercially and are aligned by industry types. The most effective approach is to develop your own historical baseline of performance. There are several tools and techniques available to support the development of an internal baseline.

Either alternative for calculating capacity (tool vs. baseline) has its pros and cons. A commercial estimating tool can work very effectively but will need to be calibrated to fit the behaviors of the organization. These adjustments take time. Similarly, developing your baseline of performance will prove in the long run to be more accurate, but you need time to gather and analyze the data.

Exploring the Options

If an investment in time and resources is one of the barriers for the IT organization to move forward with the development of a more effective estimating practice then there are several

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alternatives that they should consider.

The sizing of a project or application can be difficult and time consuming particularly in the early stages of development. A variance on the detailed method of function point sizing noted above is the FP Lite method. The FP Lite methodology utilizes the same definitions for identifying the five elements; however, it does not require a detailed examination of each element and thereby significantly reduce the time and increases the ability to obtain a relative size value. Studies show that there is some trade-off in accuracy; however, it is not considered to be significant in light of the value gained by quickly calculating a size value.

As noted earlier, complexity and capability variables can be obtained by creating a baseline of performance where by quantitative and qualitative data is collected, analyzed and built into the estimating model. By examining recently completed projects over a period of 6 to 12 months, the proper data points of complexity and development team performance can be collected and analyzed. The knowledge gained from this experience will allow for the creation of relatively simple algorithms that make use of past performance levels and simply apply a rate of delivery depending upon the size of the new project and the matching profile of performance. Creating an internal baseline of performance is often best performed by a consultant who has experience with selecting the proper variables and developing the delivery rates appropriate for your industry and technical environment.

Estimating as a Best Practice

To further support the benefit or the 'correctness' of the options expressed above we need only look to the Software Engineering Institute (SEI) requirements for good estimating to underscore the value of these options. The SEI lists the requirements for good estimating to involve the following:

- An historical database
- Structured processes for estimating product size and reuse
- Mechanisms for extrapolating benchmark characteristics of past projects
- Audit trails
- Integrity in dealing with dictated costs and schedules
- Data collection and feedback processes to foster correct data interpretation

Prior to establishing good estimating practices an IT department may have gone about their business of estimating by trusting the project manager's 'gut feel' for how long the process would take. Or the project team would burn extra unaccounted for hours trying to fit the actual work load to the originally estimated work load.

Once best practices for estimating are established project managers are now referencing historical data points for similar

project types and then calculating estimates based on known parameters and statistical calculations of risk. Actuals are recorded and stored for use in future estimates.

Conclusion

In summary, being able to estimate more efficiently and effectively is both possible and practical. The following key points will guide you to a successful outcome.

- We need to recognize estimating as a problem and a potentially costly problem at that. Not until we fully understand that improper estimating is a potential barrier will we be able to consistently and successfully deliver software.
- The way we think about estimating should be reframed in the context of managing expectations based upon the best information available at the time. Estimating is not a crystal ball used to predict the future.
- We can no longer afford to compromise on what we need regarding the input components that make up a successful estimating model. It will require some investment of time and resources but the payback will be well worth the investment.
- And above all, don't overly complicate your estimating model. Adopt practices such as FP Lite to generate size information that is statistically accurate enough for the job of early estimating. Collect the baseline data you need and compute your own internal delivery rates of performance.

About the author:

David Herron is a management consultant, lecturer and author of several industry leading books on IT performance measurement. He is Co-founder of David Consulting Group, dedicated to the advancement of business value through software. David also provides job performance coaching services and lends his expertise in an advisory role and as a board chair on several non-profit boards.



Sheila P. Dennis, CFPS, CSP. Sheila is a recognized author, speaker and trainer in the field of Function Point Analysis. With over 30 years experience in IT management, software analysis, and measurement, she has worked for the Departments of Commerce, Interior and Defense; Gartner Group; and is currently Senior Managing Consultant for DCG Software Value. In addition to being a CFPS for 20 years, she is a graduate of Columbia College in Mathematics. She is Past President, Rocky Mountain Function Point Users Group; contributing author to It Measurement: Practical Advice From the Experts, The IFPUG Guide to Software Measurement, and Guidelines to Software Measurement.



The right measurement to answer the right question

by Frank Vogelesang

Software has many aspects. The measurement of various aspects leads to different perceptions. You may run into serious problems if you make a decision based on the wrong measurement.

Software plays an increasingly important role in our society. Companies are increasingly dependent on their software and therefore they want to know more and more about that software. There is still a lot of debate on which aspects are the most important. I come across debates that try to determine which measurement of which aspect is the absolute best. Some point to functional size related measurements, others to technical code quality measurements. Both are very different measurements that are related to the same piece of software, but which one is the best. In my view that is the wrong discussion.

Start with the right question

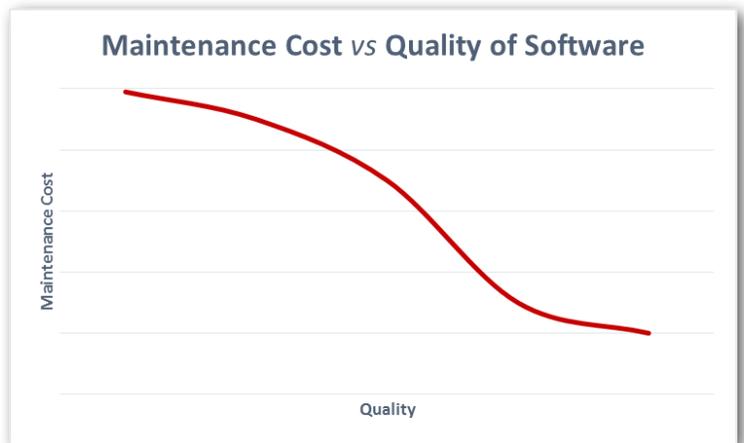
Software has many aspects. ISO alone has reserved the full range of 25000 to 25099 for software product quality. In addition, a metadata standard (ISO / IEC 14143) for the functional size of software with five elaborate methods, of which the IFPUG function point analysis (ISO / IEC 20926), COSMIC function point analysis (ISO / IEC 19761) and Nesma standard function point analysis (ISO / IEC 24570) and the most frequently used methods. So there is a lot to be measured in software. But what you should measure depends on what is important to your organization. An organization that needs software to be ready fast to support a product with a short lifecycle benefits most from information on how fast the software can be developed. An organization that needs to pay benefits to customers for a prolonged period of time and must account for these payments is particularly interested in robustness and error (in)sensitivity of the software. Although both organizations need software, they probably measure very different aspects. And even for that situation ISO has come up with a standard for selecting the appropriate measurements (ISO / IEC 15939). In that standard it is clearly defined that the selected (best) method depends on the questions the organization needs to answer.

Quality measurements

You always have quality software. The only question is whether the quality you get is good enough for what you want to achieve as an organization. An application that supports a short-term campaign will, in general, need to be much

less robust and maintainable than an application that will be deployed for an extended period in an environment that is subject to regular changes. In the latter case, it is of vital importance to require a high level of maintainability from the software. Maintaining poor quality software is factors more expensive than maintaining good quality software.

Maintenance Cost and the Quality of Software



The most important parameter to determine the cost of application management of software is the quality of the software. Software of low quality is difficult to maintain and therefore changes to the software will be expensive. From a certain level of quality the costs of application management decrease significantly. To evolve good maintainable software to perfect maintainable software, requires a relatively large effort. Based on the role of the software in an organization one can determine a level of quality that is good enough.

Given the rise of companies like CAST and Omnext, more and more organizations are concerned about the quality of their software. There is only limited published data on the relationship between software quality and the cost of application management, but from my own practice, I know that there is a very distinct relation (see box). So for applications that need to be managed over time good quality is a must. Determining the quality of software can be done by looking at the number of errors found in the software. Another option is to look at a number of characteristics of the software, that are known to increase the chance of errors. A very effective combination is to scan for these characteristics during the development of the code in order to avoid errors sneaking into the software.

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(The Right Measurement, continued from page 18)

Productivity measurements

In software development, time is invested to create or adapt functionality. The result of this is productivity. A measure to determine how much functionality can be developed or adapted in a certain amount of time. This measure is not only relevant for pre-planned software development, but also in agile software development. The business stakeholders, will still ask questions on how much the software development will cost and when it is ready to support a new law or a new product launch. Especially with hard deadlines from legislation or from a marketing campaign it is important to make sure in time that the software is ready when it is needed. The number of lines of code produced, will not give any information whether the right functionality will be delivered in time. At the code level, you cannot determine whether this functionality is the functionality required by the customer on which he has built his business case. Moreover, within a single programming language one line of code may offer much more functionality than the other and different programming languages have different expressiveness when it comes to functionality per line of code. The programming language is one of the top four key factors that determine time, money and schedule. In addition, it is important to know how efficiently the team can use the programming language in order to create or adapt functionality.

A user wants functionality and quality

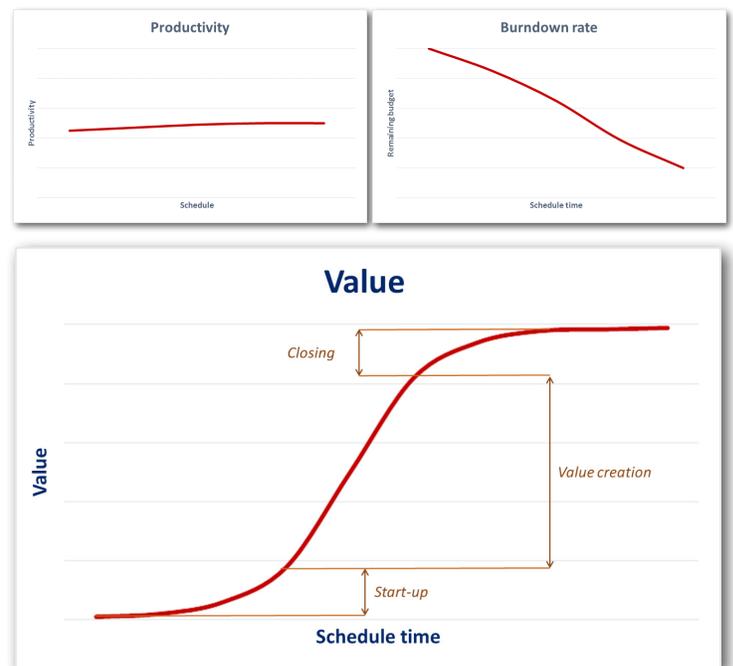
If software is needed to support a new law or a new product, the user must be supported with new or modified functionality. The software must have some new features to be able to make that possible. The size of these features can be expressed in function points. This does not require code and extensive documentation. Most use cases will suffice. Depending on the type of software you can choose either IFPUG/Nesma or COSMIC to express the size of the functionality. The functionality is implemented in code. That code determines the quality aspects of the software, so for example how secure or how maintainable the software is. In general, a user is not interested in how much code is required, but in what he can do with the software. And how he can do that. That is something you measure in function points and write into code.

It's about value

Productivity alone is not the Holy Grail. It is important for the estimate and planning, but in the end it always comes down to whether the aspect that you measure, represents value to the organization. In agile projects, you can see that

quite nicely. In the first sprint, little value is added. The team must do some preliminary work, such as the implementation of architecture, infrastructure and tools. These activities are important to the team, but provide the user with little value. Then a large amount of value is realized with the top priorities of the backlog. At a certain moment the most important things are done and functionality is being implemented that is nice to have, but has less value. That is the moment to decide to stop an agile project. Therefore, in contracting an agile project, it is important to ensure that the contract allows you to stop when the added value is decreasing. If your contract does not allow you to stop in time, a part of the value of agile development is lost.

Productivity and value



Productivity and burndown rate are (almost) constant during the entire process and thus provide no information when most value is created and when software development adds less value to the organization. Yet many organizations only manage on productivity and / or burndown rate, which will also create less valuable software in agile projects.

Value is not the same for every organization. In an organization that is driven by time-to-market speed, value is mainly controlled by productivity. For an organization that is driven by reliability the value is mainly determined by quality aspects. The mix varies by organization and sometimes per project. For example, a packaged software provider has rebuilt a financial

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(The Right Measurement, continued from page 19)

software package, that was built in a very productive programming language, in a language that could be developed more slowly. Why? Because the resulting software was more robust, faster and more energy efficient. The development of the financial software package was more expensive, but the use of the package was for the end-users more stable, faster and cheaper. For the package software provider this was much more valuable than the productivity with which the financial software package could be adjusted.

How to measure value

What determines the value to an organization is difficult to capture in a generic advice. Ideally for each piece of functionality, you create a business case about what this functionality will provide the organization when it is available. This business case must be recalibrated after every iteration. In practice, I almost never encounter this. A pragmatic solution for projects is to give all functionality a MoSCoW prioritization. When reaching 'Should haves' it must be considered when to stop the project. In a DevOps environment you can scale down the number of teams when no 'Must haves' can be brought to production.

About the author:

Frank Vogelesang is manager Pricing Office at the Application Management & Outsourcing division of Ordina. Ordina is a mid-size systems integrator in the Netherlands, Belgium and Luxemburg. He also serves as President of COSMIC and is member of the Counting Practices Committee of both COSMIC and Nesma. Apart from his internal duties at Ordina he regularly advises customer organizations about realistic cost levels of their IT function and on competitive pricing of their IT services and service offerings.



FTR's Inventory - The "Homework"

by Marcus Mello

So much has been said about Maintenance Pricing, especially with the avalanche of IT Factories, and with them the disagreements and punches on tables ...

Well, calm down gentlemen, if you have not done your "homework," how then do you expect magic numbers to reach your tables?

Yes, we will need the famous and fabulous sayings (really fables), "Indicators of Productivity", not just those for construction, but for differentiated platforms, different teams and projects scattered on the timeline ... hence fables.

They seem surreal and nothing beats anything.

We can understand "Productivity Indicators" as "Own and Prior Experience" in software development, under a given technological platform, by a certain team, in a given period of maturity of the company.

Using "market" indicators for billing, or for any really serious subject, is surreal.

Companies that do not have their own experience on a given platform should preferably outsource the demand, or install a pilot project in order to estimate their own reality.

At most, market indicators serve for a slight comparison, (I really said slight) with their own indicators. This is because so many factors influence these numbers and an appropriate comparison should take into account as many of them as possible.

The quality of requirements, team experience, motivational environment, availability/quality of technology infrastructure, and internal company policies are just a few of the countless factors that make the same project under the same technology platform, produce absolutely discrepant indicators from company to company.

You ask me: Is it difficult to produce my own indicators?

Well, how about starting with homework? FTR's Inventory.

1) In order to produce initial documentation, take inventory of all FTRs of your company's main applications through Indicative Application Counts (NESMA). This method requires very little documentation, (almost none), tracks the FTRs, and even produces an initial metric of system size.

With development cost worksheets, where the deadlines, costs and resources of the project were previously registered, it is already possible to obtain some initial indicators, very precarious, but typical of your company.

2) Make Estimated Application Counts (NESMA) of

(continued on next page)

(FTR's Inventory - The Homework, continued from page 20)

selected core applications, as your company's business focus. With the FTRs inventoried in the Indicative Counts, it will be possible to make the first "validation" of these surveys.

The transactional functions (EP, elementary process) identified here are absolutely the same as a Detailed Count, with the advantage of requiring less documentation because they do not identify the DETs or FTRs associated with the Elementary Processes, and thus do not determine their real complexity.

With the same construction deadlines used in the previous calculation (Estimated), we can already reach very interesting numbers in the indicators. Although not yet suitable for commercial contracts, they can be used, for example, in strategic decisions such as to elect applications for Detailed Counts, which are more costly and time-consuming than the Estimates.

3) Finally, perform Detailed Application Counts (IFPUG) of those that essentially are the core of the business, and were selected in the Estimated Count of the previous step. This will give you indicators of various types that are really useful and can be used formally in management reports, bids and commercial contracts.

Conclusion.

- Do not venture with third-party indicators, "market standards".

- Use them as a reference, but watch out for the detachment of your reality.

- Do your homework and run an inventory of FTRs and EPs for your Applications.

- Use financial documents where deadlines, costs and development resources of your applications have been recorded along with the established FPs to find their own indicators.

Good homework.

About the Author

MBA in Strategic Management of Information, UFRJ/ Brazil

Systems Analyst, working with IBM mainframes since 1986.

Development in Cobol / DB2 (DBA) and Natural / ADABAS until 1995.

Analysis and Implementation of Multiplatform Systems using FPA until 2000.

Audit of Metrics by FPA and Quality Control until 2006.

Instructor FPA, Project Office Consultant for Metrics and Requirements Engineering for Federal Departments and Offices, to present date.

Specialist in project measurement for Bids.

Specialist in Databases of FPA Metrics for Auditing, Benchmarking and Indicators.



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Certification Committee

The Certification Committee has completed the move of the CFPS exam to iSQI, our new exam provider. iSQI has been a great partner helping to get the exams set up for remote testing. The exam is available in Brazilian Portuguese, English and Italian. We continue to work on additional languages for the CFPS exam and to make the CSP exam available in January. See the CFPS Certification Exam Overview and Guideline on the IFPUG website for more information about the CFPS exam and how to take the exam using iSQI.

Pierfranco Gennai of Rome, Italy, was recognized as the 750 person to extend his CFPS using the Certification Extension Program (CEP). This is a great milestone for the CEP and recognizes how active the associates with their CFPS are in maintaining and applying their Function Point Analysis knowledge. Congratulations to all 750+ associates who have extended their CFPS certification over the years since 2002 when the Certification Extension Program became a reality.

The Certification Committee is overjoyed to welcome three new members to the committee: Francesco Gasparro, Manuel Buitrago, and Sheila Dennis.

Communications and Marketing Committee

by Antonio Ferre Albero, Chair

One month after our last edition of MetricViews saw the light (August 2016), and just a few days after the Baltimore unConference where he participated, on September 22, 2016, our friend, colleague and IFPUG CMC chairperson, David Thompson, passed away. It was a shock and too fast to assimilate this sad news that arrived so quickly after we had all met. David's unique savoir faire, discretion, talent, diplomacy, good character, honesty and professionalism will live on in the IFPUG family. It is impossible to measure the effort and time that he dedicated, selflessly, to our organization during the past decades and in different activities.

I recall with fondness that in this same section, in the summer 2014 MetricViews edition, David announced me as a new CMC member and welcomed me with joy. Today, in an unusual rainy, windy, and cold winter day from the Mediterranean part of Spain, it is with sadness I am writing these sad, sorrowful words. I am sure that David will take care of us, and in the words of Tom Cagley "we hope he will be sailing with the wind for eternity." Thanks for all, David.

The Communications and Marketing Committee, CMC, has adopted the concept of "IFPUG news goes out to you through formal eblasts, and also through our different social media channels", as we announce the interesting advancements and changes happening at IFPUG. We invite to you to follow us on Facebook, LinkedIn, our blog at IFPUG.org - and join our increasing number of followers (and share our content) on social media. We invite to you, not only "to follow" IFPUG, but to share our content in Project Management, Metrics, Universities, and a long etcetera of communities, and vice-versa (our only limits are that you not publicize products, and that the content is interesting for the IFPUG community) to reinforce actual synergies and create new ones.

On December 2016, the IFPUG president -Tom Cagley- appointed formally Antonio Ferre as IFPUG CMC (Communications and Marketing Committee) chair, being Steve Neuendorf the CMC vice-chair. We are trying to reinvent actions and existing tasks in the CMC group, and share with you of an accredited knowledge, experience and seniority group of people (Steve Neuendorf, David Herron, and Linda Hughes from USA, Justin Keswick from Canada, Paul Radford from Australia, and myself from Spain), together with the board liaison Carol Dekkers, USA. We are a small group, and we are looking for new members! If you are interested in volunteering for this IFPUG Committee please send a mail to ifpug@ifpug.org.

We hope that this issue of MetricViews will be interesting for you. If you think that something could be improved, your feedback is welcome (cmc@ifpug.org). Looking forward, a lot of interesting events are coming; among others the 30th IFPUG anniversary activities that will be place this year, or the great event ISMA¹³ "Creating Value from Measurement" that will take place on March 5-7, 2017 in Mumbai, India. We'll be in touch!

Conference and Education Committee (CEC) report

by Luigi Buglione, acting Chair

After the success of ISMA¹² in Rome (Italy) last May, with more than 350 people attending the four-day event, the Conference & Education Committee (CEC) spent the second half of 2016 organizing the new ISMA conferences for 2017. The first one is ISMA¹³ - co-organized with the Mumbai chapter of the Computer Society of India (CSI) - that will be held in Mumbai (India) on March 5-7 2017, including the conference

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day and two workshops (FPA and SNAP) and a CSP exam session. All the info can be found accessing the conference website (<https://isma13in.wordpress.com/>).

The second one, ISMA¹⁴, to be held during the 2017 fall in the US, will celebrate our IFPUG 30th anniversary: IFPUG was founded in 1986 and yet 30 years are passed, creating a measurement community across the world with a thousand of people, increasing the knowledge about how to measure and size requirements and properly manage projects. Further information about ISMA¹⁴ will be provided during next weeks, for allowing you all to massively participate to this new event.

A reminder: IFPUG members can access conference proceedings, at no charge, in the Knowledge Base within the Members Services Area of the IFPUG website and partly from the external website, clicking here.

BTW, as any IFPUG committee, we are delighted to work together with all of you interested in helping us. Welcom to our three new volunteers that recently joined CEC: Saurabh Saxena and Sushmitha Anantha from India and Alfonso González from Spain. Would you like to join us? Send an email to ifpug@ifpug.org or complete the volunteer form available on the IFPUG website.

Last but not least, for any evenience, please contact us at cec@ifpug.org!

Functional Sizing Standards Committee

By Bonnie S. Brown, Vice Chair

2016 remained a busy and productive year for the IFPUG FSSC. In addition to our monthly committee meetings, the FSSC met for 3 days in September after the Un-Conference in Baltimore, Maryland, USA. At the Annual meeting, we worked on white papers, iTips, and did planning for the coming year.

The FSSC's major accomplishment was the completion of a joint white paper with the NFSSC, "Integrating Procedures for Function Point Analysis, Parts 1 & 2. 2016 also saw the committee working on a new iTip: iTip #8 Integrated Queries. In addition, the FSSC is ready to publish two new white papers: "Function Point Analysis Applied to BPM-Based System" and "Applying Function Point Analysis to Data Warehouse Analytics Systems". All three of these items are currently in the process of being reviewed and approved by the IFPUG Board. The FSSC is also working on a new version of IFPUG Case Study 1, which will be released in 2017. The FSSC is looking forward to a productive 2017 and welcomes suggestions from members on topics of interest for future projects. You can submit your suggestions to fssc@ifpug.org.

International Membership Committee

The International Membership Committee has worked during the second half of 2016 in a series of initiatives to improve the experience of the IFPUG community. We uploaded a translation of the FAQs for the Chinese, Brazilian and Spanish community. We are working in a value proposition for the corporate membership, so that those members can get as much benefits as possible out of their membership.

We are also working with the Indian members to be able to grow the community over there and to have an IFPUG conference over India in the next future.

We have answered during this period over 200 questions by the different country representatives, and we have actively helped members with questions regarding the transition to the new certification system amongst other topics.

ISO Committee Update

By Steven Woodward, Chair IFPUG ISO Committee

The IFPUG ISO Committee is moving forward on several fronts. Carol Dekkers represented IFPUG at the ISO/IEC JTC1 SC7 US TAG meetings in California where the major focus was on measurement and quality.

A decision was made to advance the standardization of SNAP by working with IEEE's software and systems engineering standards committee (SESC) to form a SNAP project working-group. IEEE is an association dedicated to advancing innovation and technological excellence for the benefit of humanity and is the world's largest technical professional society. It is designed to serve professionals involved in all aspects of the electrical, electronic, and computing fields and related areas of science and technology that underlie modern civilization. Talmon Ben-Cnaan, IFPUG's chair of the Non-Functional Standards Sizing Committee (NFFSC) has agreed to be the working-group chair on behalf of IFPUG. If you are interested in volunteering to participate in this initiative, please contact Talmon (email talmonbc@amdocs.com) We hope to have a good cross-industry and standards participation in the working group that will lead to an improved SNAP product. Our goal with this joint IEEE/IFPUG working group is to provide SNAP with increased awareness, value proposition and overall credibility internationally.

We are all looking forward to an interesting 2017 on the standards front!

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Non-Functional Sizing Standards Committee

In the past year, the NFSSC and the FSSC have collaborated and created guidelines on using function points and SNAP points for measuring the performance of software projects, software development effort, cost estimation and benchmarking.

Part 1 provides guidance on an integrated process for Function Point Analysis and SNAP, to size both the functional and non-functional user requirements of a project. It provides rules and examples of sizing mixed requirements, which have both the functional and non-functional aspects.

Part 2 focuses on metrics that are derived from size - how to effectively use the resulting sized data.

The NFSSC has collaborated with the Marymount University of Virginia, to improve the accuracy of the Help Methods SNAP sub-category. This work analyzed possible alternatives for sizing Help, collected SNAP data and effort data from users in the Washington area and found an improved sizing formula, showing a high correlation between SNAP size and effort.

During the coming year, the NFSSC will work with IEEE to create a non-functional sizing standard based on SNAP. (i.e. SNAP will become an IEEE standard).

In addition, we plan to publish examples and case studies of SNAP sizing that will cover common sizing issues and new emerging software areas.

Behind the Scenes – “Names and Faces”

By Megan Capie, IFPUG Executive Director

Happy New Year and Welcome to IFPUG Headquarters! As this is my first year as IFPUG’s new Executive Director, I thought I would take a minute to introduce myself and the rest of your HQ IFPUG team. International membership can be a challenge with multiple continents, time zone changes, and the



occasional crossing of the date line. I believe placing faces with the names members hear so often, will help “narrow the divide” caused by the afore-mentioned challenges.

Michele Giovine supports IFPUG members with their CFPS certificate updates. Michele also handles the publication of Metricviews twice a year.



Nicole Lauzon oversees the operations, projects, and deliverables of IFPUG by acquiring a thorough understanding of their mission and governance, supporting program development and organization plans, overseeing the database management, and reporting. She is the go-to person for membership, event and recruitment efforts. Nicole would like to remind all members to review their personal information on the members’ site to be sure it is up-to-date.

Please list both personal and business email addresses. Nicole also takes care of the certification extension applications, so if your CFPS certification is expiring soon, be sure to expect an email from her.



Angel McAndrew maintains IFPUG’s general ledgers, prepares financial reports, reconciles bank accounts and records cash receipts and cash disbursements. Angel is the financial liaison between IFPUG, CPAs and association management executives. Angel’s 20+ years as an accounting professional with expertise working with various sized businesses and nonprofit organizations has enriched her skills in many areas including tax preparation and planning, general journals and accounts payables.



Megan Capie provides strategic, managerial and administrative expertise to IFPUG. She manages Board and committee adherence to association policies and procedures and manages the daily operations of IFPUG to ensure the association performs against a long-range strategy that achieves their mission. She leads Headquarters’ presence and reporting at Board of Director meetings and association program development in accordance with industry trends.



Gabrielle Copperwheat’s professional association management background and her focus on building an infrastructure of growth and client success through leadership and executive governance, administrative operations, accreditation, member services, and financial management landed her the position of IFPUG’s Senior Client Advisor. Gabrielle stays abreast of emerging trends in the industry and guides her team to provide an entire array of state-of-the-art management services for IFPUG. A Parisian by birth, she speaks more than a dozen languages fluently.

We’re very excited about this membership year! As always, we look forward to hearing from you at ifpug@ifpug.org. If there is anything we can do to assist you with your membership, please do not hesitate to contact us.

*Best regards,
Megan Capie*

Marcel Abou Khalil IBM	Francisco Dos Santos Neto Rustcon Engenharia LTDA	Getulio Kunikosita Magna Sistemas e Consultoria S/A	Natascia Patera Hewlett Packard Enterprise
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Giacinto Claudio De Caro		Eduardo Oliveira	
		Fabrizio Pagano SOFTLAB S.p.A.	

Congratulations to these NEW Certified Function Point Practitioners!

Fábio Augusto Alves	Tiziana Giacon Hewlett Packard Enterprise	Beomseok Lee	Lucas Santos
Rodrigo Cendon	Norman Krell IBM	Eliza Mendes	Giuseppe Tafuno Hewlett Packard Enterprise
Wai Hong Chan	Kamlesh Kumar Optum	Denis Oliveira TI Metrics Ltda	Brindhya Thangavelu Accenture
Eduardo de Albuquerque Gomes Pereira Plennus TI	Filippo La Noce D.P.O. Srl	Deepti Patil Accenture	Marisselme Vieira
Luiz De Souza Sobrinho		Ernist Ramirez	Jan Vochten Hewlett Packard Enterprise

CERTIFICATION MATTERS!

CFPS Matters!

Marcelo Elias Nunes Ribeiro, ti MÉTRICAS - Brasil

“The CFPS certification has boosted me in the metrics area in a surprising way, despite of having previous experience in the technique, after the certification that I became recognized in the metrics community as a professional who has their knowledge evaluated and attested. This has provided new “windows” of opportunities to impulse my professional career. So I consider it important to obtain the certificate, it should be the goal to be achieved by every professional who wishes to pursue this career. “

“A certificação CFPS me impulsionou na área de métricas de uma forma surpreendente, apesar de ter vivência anterior na técnica foi a partir da obtenção do certificado que eu passei a ser reconhecido na comunidade de métricas como um profissional que possui seu conhecimento avaliado e atestado, isso proporcionou novas janelas de oportunidade para alavancar a minha carreira profissional, por isso considero importante a obtenção do certificado, ele deve ser a meta a ser alcançada de todo profissional que deseja seguir nesta carreira.”

Fernando Monteiro Guimaraes, ti MÉTRICAS - Brasil

“I achieved my CSP certification at the first exam organized in Brazil in 2013, and I have maintained the CFPS certification since 2007. I consider very important this continuous evolution of the techniques, as it reaffirms the commitment of the metrics community to the best practices, aligned with the market demands. We are now beginning to evaluate the first results of the SNAP utilization. What is going to be the next?”

“Consegui obter minha certificação CSP no primeiro exame organizado no Brasil, em 2013, e mantenho a certificação CFPS desde 2007. Considero ser muito importante esta evolução contínua das técnicas, pois isso reafirma o compromisso da comunidade de métricas com as melhores práticas, alinhadas às necessidades do mercado. Nesse momento já estamos iniciando a avaliação dos primeiros resultados da aplicação do SNAP. Qual será a próxima?”