

Soft Measures

A Total Metrics Newsletter Publication
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Special Interest Articles:

- Ed Yourdon speaks on Project Risk factors. 1

Individual Highlights:

IFPUG CFPS	1
ISBSG Update	2
Function Points Beyond Project	
Estimating – Part 2	3
CMMI	5
Thoughts for the month	6

What's News in Metrics?

Our most important news for this month is that the **MarkII** and **IFPUG 4.1 unadjusted methods** for functional size have both officially completed their ISO approval process and are awaiting publication as ISO standards. The approved ISO versions of both methods **do not use an adjustment factor**. The ISO functional size is reported in 'unadjusted function points'. The newer **COSMIC-FFP functional size method** and the Netherlands **NESMA** method are both currently in their final ISO ballot which will give our industry four official ISO

functional sizing methods.

This month's newsletter includes updates from the USA IFPUG conference and the ISBSG Workshop as well as a write-up on Ed Yourdon's insights into project risk management.

Total Metrics is pleased to announce that our training course in IFPUG 4.1 Function Point Analysis has been officially **IFPUG certified** and attendees can gain credits towards their CFPS recertification.

Total Metrics congratulates one of our senior consultants, Martin D'Souza, in becoming a member of the IFPUG

executive board. Martin has served on the IFPUG Counting Practices Committee since 1998.

We continue with Part 2 of our series of articles on how to use function points beyond project estimation. This series will be concluded in our December issue.

Pam Morris
Editor

Ed Yourdon – A new perspective on Metrics

Renowned IT Guru, Ed Yourdon's key note address at the San Antonio IFPUG Conference last week, highlighted **the need for early and ongoing measurement to give early warning of project failure**. Yourdon postulated that projects do not fail suddenly but signs of failure are evident early in the project lifecycle, we just

fail to measure and heed them. He identified key metrics to highlight risk. Some of these are easy to collect and can give us insights we may have otherwise missed. Eg, collect total number of stakeholders who:

- specify requirements (and will introduce ambiguity and inconsistency),
- authorise outcomes (and will introduce delays and

rework)

- will have something to lose if the project is successful (and may destabilise the project).

He went on to identify additional key factors that contributed to failed projects:

- Lack of clear quantifiable acceptance criteria for when the project is finished **Cont. page 6**



“Start collecting your re-certification points now”



Postponing the Agony of the CFPS Exam

As of September 01 2002, the criteria for currently certified CFPS to collect credit points towards re-certification has been officially approved.

The **100 credit points** required must be accrued from at least **4** of the **12** official Activity Categories. Only Activities performed after September 01, 2002 will be considered. CFPS wanting to apply for an extension must do so at least **90 days prior** to their CFPS expiry date.

Official Activities include,

authoring, presenting or attending an IFPUG *accredited* FP related training course. The number of credits awarded depends on the activity. Eg, a two-day course will accrue 25 points for the author, 20 points for the instructor and 15 for the attendee.

Attending, presenting or authoring IFPUG accredited conference presentations or participating on an IFPUG Committee will score between 2 and 35 points.

Points may be collected for performing function point counts and validating them (1

credit point for each 100 UFPs counted or 3 credit points per audit over 100 UFPs). To have your points recognised by IFPUG you will need to submit details of your counts to IFPUG for verification.

Each activity category has an upper limit on credit points. Eg you are only allowed to accrue a maximum of 50 points by actually counting. More information at:

www.ifpug.org/certification/cepActivities.htm

Industry Metrics for Maintenance and Support

“ISBSG moves towards covering the whole software lifecycle by including Maintenance and Support in the ISBSG metrics repository.”



ISBSG

For information on how to access the ISBSG data, visit : www.ISBSG.org.au.

Members from nine countries met for the **International Software Benchmarking Standards Group (ISBSG)** annual workshop, last week in San Antonio Texas to plan the analysis and reporting on the **1,710** projects in the ISBSG metrics Repository

One of the major outcomes for the meeting was to approve the data collection kit for maintenance and support data for both individual applications and for an organisation.

The items collected embrace some familiar concepts defined within the UK based ITIL process model for service support. It will be available from on the ISBSG WWW site in December.

ISBSG also agreed to investigate the capability of delivering

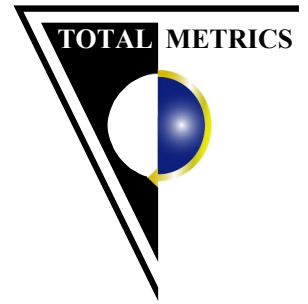
a range of their services online via a subscription model so as to make their information more assessable to their target audience.

The recent approval of the *unadjusted* functional size measurement methods as ISO standards has highlighted the existing need for productivity reporting to be normalised to *unadjusted* function points. ISBSG agreed to continue collecting the adjustment characteristics but to report all functional sizes and productivity rates in *unadjusted* values. This change in reporting will be effective as of the next formal analysis of the ISBSG repository.

ISBSG have just released a *Software Metrics Compendium* of their analysis of the latest industry

trends in productivity and quality for Software Development. The latest version has formalised its productivity reporting by ‘normalising’ the contribution of effort. It is available for purchase online via the ISBSG WWW site.

The Australian State (VIC) Government via the Australian Metrics Association has commissioned ISBSG to develop an Industry Sector Report on Best Practices in Software Development in the Government Sector. The report will utilise ISBSG productivity and quality data in addition to industry case studies. ISBSG is seeking similar interest from other Government bodies to enable industry comparisons across the Government sector.



Function Points – beyond project estimating – Part 2

Functional Sizing enables software managers to gain a quantitative handle on the scope of their software projects. They can use this objective measure of functionality to track scope changes during development and be able to report progress, quantify the impact of rework and plan Support budgets.

Part 2 of our article on the uses and benefits of function points explains how.

ACOSM – 2002 METRICS CONFERENCE

Australian Software Metrics Conference – Melbourne Australia November 19 –22.

- Workshops
- Presentations
- CFPS exam

Book now

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Introduction

This is the second part of a three part series to be published over three issues of *Soft Measures*. Each part focuses on a different part of the software development life cycle with respect to the different:

- benefits that can be achieved by an organisation that collects function point measures.
- uses for function point analysis beyond simply measuring productivity and improving project estimates.

This issue we look at the ways function points can assist in better management and control of software development projects in project construction and after software implementation.

Whilst IFPUG function points provide the functional size data for figures provided in this article the reader should note that the concepts explained are applicable for all functional size measurement methods.

FPA Uses and Benefits in Project Construction

Once the project commences the function point count has an ongoing contribution to monitoring and control of scope creep and quantifying the impact of rework.

Monitoring Functional Creep

Function point analysis provides project management with an objective tool by which project size can be monitored for change, over the project's life cycle.

As additional functions are identified and functions are removed or changed during the project, the function point count is updated and the impacted functions appropriately flagged. The project scope can be easily tracked and reported at each of the major milestones.⁷

In Australia the Victorian State Government in Australia has adopted a recommended policy for managing and controlling government out-sourced development projects by using function points. Suppliers tender for the development, based on a fixed price in dollars per function point. Scope changes are automatically charged by the supplier at a predetermined contracted charge-rate based on the number of function points impacted and the stage at the life cycle when the change was introduced. The government policy underpinning this approach is called SouthernScope. More information is available at :www.mmv.vic.gov.au/southernscope.

If the project size exceeds the limits allowed in the initial estimates, this is an early warning that new estimates may be necessary. Alternatively, it may highlight a need to review the functionality to be delivered by this release.



Project Sizing Software™

"Total Metrics' new software scope management tool - "SCOPE Project Sizing Software™" assists in the collection, analysis and reporting of software size to assist project managers to quantitatively monitor the status of each function within the project. SCOPE graphically reports objective measures of project rework. It provides a mechanism for a documented, quantitative audit trail of software changes to form the basis of contract renegotiation.

Contact Total Metrics for a demonstration copy or more information.

Admin@totalmetrics.com

.....continued

Function Points – beyond project estimating..... Continued

*“Function Point Analysis provides an objective quantitative means of evaluating software development projects for **more informed project decisions!**”*

*“It typically takes around **1 person to support 830 function points.** Knowing this number enables management to compare current support ratios to know if their legacy systems are costing too much and be able to objectively assess the cost benefits of a replacement.”*

Figure 1

Relationship between the size of an application and the number of support staff required (Source - Total Metrics - 2000)

Assessing and Prioritizing Rework

Function point analysis allows the project manager to objectively and quantitatively measure the scope of impact of a change request and estimate the resulting impact on project schedule and costs. With this immediate feedback on the impact of the rework, the user can evaluate and prioritize change requests.

The cost of rework is often hidden in the overall project costs, and users and developers have no means to quantify its impact on the overall project productivity rates. Function point analysis enables the project manager to measure the functions that have been reworked due to user-initiated change requests. The results provide

valuable feedback on the potential cost savings of agreeing on a set of requirements early in the project and minimising change during the project life cycle.

FPA Uses and Benefits after Software Implementation

The functional size of the implemented application provides important information to the ongoing management of the support and maintenance environment.

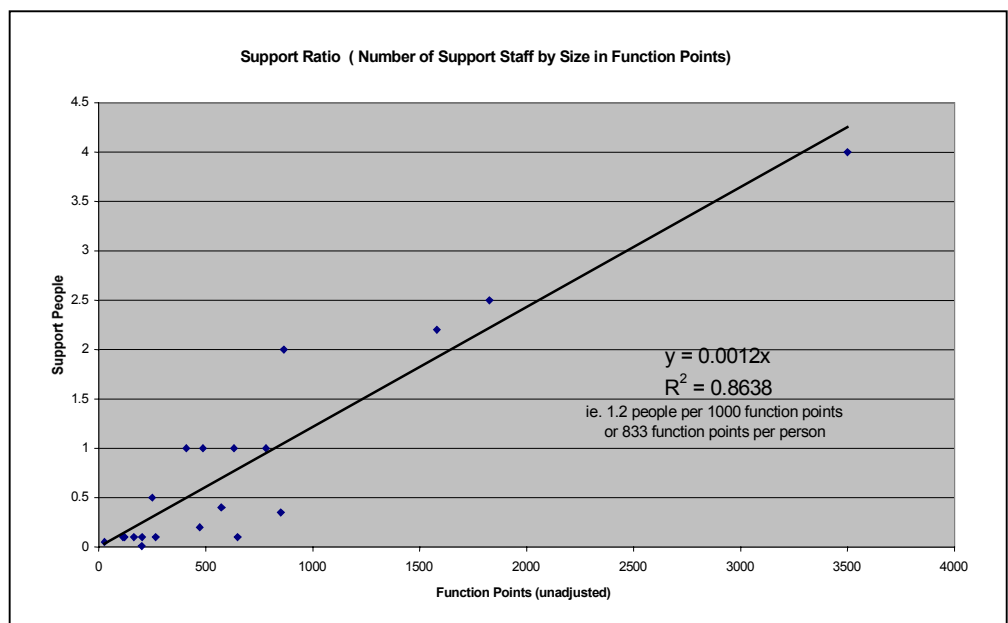
Planning Support Resources and Budgets

The number of personnel required to maintain and support an application is strongly related to the application’s size. Knowing the functional size of the application’s portfolio allows management to

confidently budget for the deployment of support resources. Figure 1 demonstrates this relationship within an Australian financial organisation. The average maintenance assignment scope (number of function points supported per person) for this organisation is 833 function points per person. The assignment scope has been found to be negatively influenced by the age of the application and the number of users; that is, as these parameters

Note: Maintenance and support activities include defect repairs and very minor enhancements.

increase, the assignment scope decreases. Capers Jones [1991] shows that an assignment scope of 500 function points per



Function Points – beyond project estimating – Part 2- continued

person for aging, unstructured applications with high complexity is not unusual, whereas in newer, more structured applications, skilled staff can support 1500–2000 function points.

Once implemented, applications typically need constant enhancement to respond to changes of an organisation's business activities. Function points can be used to estimate the impact of these enhancements. The baseline function point count of the existing application facilitates these estimates. As the application size grows with time, the increasing assignment scope provides the justification to assign more support staff.

Benchmarking

The function point count of delivered functionality provides input into

productivity and quality performance indicators. These can then be compared to those of other in-house development teams and implementation environments.

Benchmarking internally and externally with industry data enables identification of best practice. External benchmarking data is readily available in the ISBSG repository.⁹

Identifying Best Practice

Project managers seeking best practice in their software development and support areas recognise the need to adopt new tools, techniques, and technologies to improve process productivity and product quality. Baseline current practice enables management to

establish current status and set realistic targets for improvement. With ongoing measurement of productivity and quality key performance indicators, management can assess the impact of their implemented changes and identify where to make further improvements. Function points are the most universally accepted method for measuring the output from the software process. They are a key metric within any process improvement program because of their combined abilities to normalise data from various software development environments and measure output from a business perspective as compared to a technical perspective.

Planning New Releases

The functional hierarchy of an application's delivered functionality can also assist the support manager in planning and grouping change requests for each

new release of the application. The hierarchy illustrates closely related functions and their relative sizes. If the impact of change is focused on a group of related functions, development effort is reduced, particularly in the design, testing, and documentation stages. Evaluating the impact of a change request also reduces project risk by restricting projects to a manageable size and focusing change on a restricted set of related business functions.

Next issue we investigate how function point analysis can be used to assist in management decisions for the customisation and implementation of packaged software.

CMMI – making it work!

Lesley Pringle renowned UK process improvement consultant and CMM assessor visited Australia last month and extolled the virtues of the new process model from the Software Engineering Institute (SEI) at the Carnegie Mellon University. I.e. The **Capability Maturity Model (Integration) or CMMI SM**.

Her experiences has shown

that the model has only limited up take in Australia and Europe. She noted that only large corporations and the defence sector appear to be piloting the model, despite the fact that most software development companies interested in process improvement are small to medium enterprises (SMEs).

Pringle found that these

SMEs are unsure about how and why they would embark on a process improvement programme using something that appears to have been designed for large organisations.

Pringle suggested that the very flexibility of the model is what makes it seem complex and difficult to use, which

leaves it squarely in the hands of the more academically oriented.

“There needs to be a simple approach which allows practical use of this model in a process improvement programme regardless of the size of the organisation.

*It is my firm belief that any initiative within a company has to be **cont.***

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About Our Organization...

Total Metrics is a leading software measurement organisation. We assist our clients world wide to better manage and control their software application environment by measuring, monitoring and benchmarking their IT performance.

Thoughts for the Month

"The things that come to those that wait may be the things left by those who got there first "

" Quantum mechanics: The dreams stuff is made of."

"Age is a very high price to pay for maturity."

"Experience is a wonderful thing. It enables you to recognise a mistake when you make it again."

" Artificial intelligence is no match for natural stupidity."

CMMI – making it work!.... continued

providing benefit to that company. The same is true of a process improvement programme, therefore the starting point has to be an understanding of the business objectives. Adopting this strategy, rather than following a path inherent in the model, the organisation should pick the model's elements which, if improved, will provide the most benefit to the company.

An example is that if a business objective is related to achieving or improving product delivery then those processes associated with that are the processes that should be tackled first. That

would probably be Project management, Requirements Development and Requirements Management. This allows small, controllable change, rather than a big programme.

As for the complexity of the model, a small manageable programme will help, but also study will reveal that there are ways of viewing the model which make it easier to understand. For example the processes are the same in the continuous representation as in the staged representation, the generic goals and practices are the same for every process, processes are capable while organisations are mature, and certain processes are

related to generic practices. Which ever way you choose to simplify the approach, there is clearly a good opportunity for your organisation to capitalise upon its experience and be among the first to wholeheartedly adopt Process Improvement strategies and help make organisation among the best in the industry."

Total Metrics and Lesley Pringle assist organisations throughout South East Asia implement their process improvement programs. For more information contact Lesley Pringle at: lesley@compita.com or

Total Metrics at : admin@totalmetrics.com

A new perspective on IT metrics !.... continued

- Inadequate estimates of resources and quality
- No change approval process to deal with requirement's change and thus re-negotiate budgets and schedule.
- Focussing on scope creep and failing to measure requirements churn (greater than 10% churn indicates potential trouble)
- Failure to implement a defect tracking system that quantifies defect severity
- Failure to monitor project stabilisation ie being able to know and predict when bugs are being fixed faster than they are being injected.
- Failure to clearly define and allocate responsibilities to users
- Failure to implement

early risk indicators such as voluntary staff turnover

Yourdon emphasised that many of the risk factors on projects are caused by the failure to manage the business-related metrics and the projects political attributes along with its technical attributes. Projects need mechanisms to escalate early warnings of failure up to a level of management that have the budget and authority to deal with the problem. Often lower level management identifies problems but there is no process by which they can be dealt with until it is too late. The risk management process also needs a 'closure' step to ensure that the risk has been resolved and not merely waiting to

strike again.

Yourdon stressed that risk assessment is not something to be done at the beginning of the project and then forgotten. Risk parameters measured at the beginning of the project are out of date very quickly.

Risk assessment needs to be introduced as a continual process throughout the project development life cycle. It needs to be implemented as a formal process with all the definition, analysis, monitoring, feedback and reporting steps associated with a mature process.

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