

Soft Measures

Special Interest Articles:

- New *Software Sizer*™ tool for recording Function Point Counts.
- Updates from IFPUG on changes to the CFPS and CPM
- Measurement Process Standard ISO 15939

Individual Highlights:

CFPS Update	1
Support Metrics	2
FPA software	3
COSMIC Estimates	4
ISO Standards	5
Soft Factors	6

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What's News in Metrics?

Metrics enthusiasts have been busy over the last few months attending metrics conferences worldwide. In this issue of *Soft Measures*, we review some of the key committee presentations from the IFPUG fall conference in Las Vegas and the November Australian Software Measurement conference (ACOSM) in Melbourne Australia.

A common theme of the ACOSM conference was

the **new ISO/IEC 15939 standard for the software measurement process** and how this standard can be adopted within the CMMI process assessment model and adapted for use within IT organisations. We review the content of this new standard and its impact on software measurement processes.

In our review of the ACOSM conference we discuss the results of a Japanese study showing

the effectiveness of the **COSMIC-FFP functional size method** for early prediction of project costs and research into the ISBSG Repository on the soft factors impacting project productivity.

At Total Metrics we are very excited about the release of our **new Function Point Counting software the *Software Sizer*™**. We review the key features of the software and compare it with the current market offerings.

CFPS Certification Update

The IFPUG Certification committee has revised their requirements for CFPS re-certification. As of the end of 2002, instead of resitting the exam every three years a CFPS can apply for up to two, two-year extensions. That is providing they have the credits recognised by the IFPUG Certification committee and the IFPUG CPM has not been updated to a later Release number. For example if the CPM moves from Release 4.1 to Release 5.0 then a currently certified CFPS

will only be allowed one extension and will have to resit the full exam. However, if the upgrade is only from Release 4.1 to 4.2 then the CFPS can apply for an extension. The certification committee is still establishing what will constitute 'industry experience credits' that will earn an extension but they have proposed such activities as ongoing counting or auditing counts and attending and presenting FPA courses. More information can be found under CFPS Exam: www.totalmetrics.com

IT Museum

We know we are getting old when hardware we 'cut our teeth on' is being displayed as curiosity in a museum. Monash University has just opened their **Digital Evolution Museum** housing computing equipment from the early 20th century. They are urgently seeking interesting computer artefacts from the IT industry. If you are willing to donate or loan anything of interest contact the museum curator on: judy.sheard@csse.monash.edu.au and find our more at www.totalmetrics.com



"IFPUG Case studies 1, 2 and 3 now support IFPUG CPM 4.1"



IFPUG Counting Practices Committee News

The IFPUG Counting Practices committee announced at the October conference that all three case studies have now been updated to CPM Release 4.1 and are available from IFPUG.

The paper providing guidelines for identifying, and counting logical files, RETs and DETs has been released and is available from IFPUG for \$US25.

Their latest paper on assessing 'What to count in an Enhancement

Project' is in its final drafting stages and will be available soon from IFPUG for \$US10.

IFPUG has been seeking ISO accreditation for a Revised Version of the CPM 4.1 where the Adjustment Factor is optional and Functional size is the *unadjusted* size. The ISO ballot result indicated an approval once voting countries' comments have been addressed. The full standardisation process should be complete within the next 12 months.

The Counting Practices Committee is currently working on developing guidelines for the counting the following:

- GSCs
- Code tables & Entities
- Uniqueness of Elementary processes
- Multiple media
- Conversion functionality
- Shared data
- Counting automated processes

Status reports on these tasks will be published on the WWW.

Find out more about IFPUG visit :www.ifpug.org

"The International Software Benchmarking Standards Group develop new standards for benchmarking Maintenance and Support."



Benchmarking Metrics Standards for Maintenance and Support

Members from the International Software Benchmarking Standards Group (ISBSG) met for their 10th International Workshop in the UK in October. Attendees from Australia, UK, USA Germany, Italy and the Netherlands approved a data collection kit to collect metrics data for the **IT Maintenance and Support environment**.

ISBSG has been very successful for over 7 years in collecting data from over 1200 development and enhancement projects from more than 17 countries and providing productivity analysis for

these environments. However, many organisations have indicated that they focus their effort on maintaining and supporting their existing systems and urgently need industry productivity data for comparison.

The new data collection package for the Maintenance and Support environment will be available from the first quarter of 2002.

The workshop refined the ISBSG definitions for data collection, analysis and reporting to facilitate users in the consistent interpretation and

comparison of the ISBSG data.

Other outcomes from the meeting were to approve changes to the format and content of the existing Development & Enhancement data collection package.

ISBSG have agreed to work with the Government and the business sector to encourage them to adopt IT strategies that use the ISBSG body of knowledge.

For more information on the ISBSG products visit: www.isbsg.org.au

State of the Art - Function Point Counting Tool – *Software Sizer™*

Total Metrics is proud to announce the development of their new software the *Software Sizer*. The FPA count repository and reporting tool has been designed and developed by FPA experts with over 13 years' experience in FPA and is set to revolutionise counting

Graphically Model your software

The *Software Sizer™* enables you to easily functionally decompose your software in a visual display. Function Points can be assigned at the lowest level or at any node for easy, quick counting.

Report the Size Interactively

View the size and details of up to 28 nodes interactively as you scroll down the hierarchy.

Attributes of displayed nodes are simultaneously shown on the split screen.

Flag functions with your chosen characteristics eg. "Must be in Release 1" and the software will count just those functions flagged to be in scope.

Document your count to a level of detail not offered by other software

Software Sizer™ enables counts to be completely traceable, auditable and maintainable. Individual elementary processes can be cross-referenced to the individual data elements in referenced data groups. The *Software Sizer™* allows very detailed, unlimited notes to be associated with any node. You can group and classify notes, assumptions, documentation cross-references and link them to one or many elementary processes or data groups.

State-of-the-Art user interface and Windows technology

The FPA *Software Sizer™* offers the most up to date features and user interface of a Windows 2000 PC

environment. **Your existing counts can be imported from Function Point Workbench™ repositories or your own spreadsheets.**

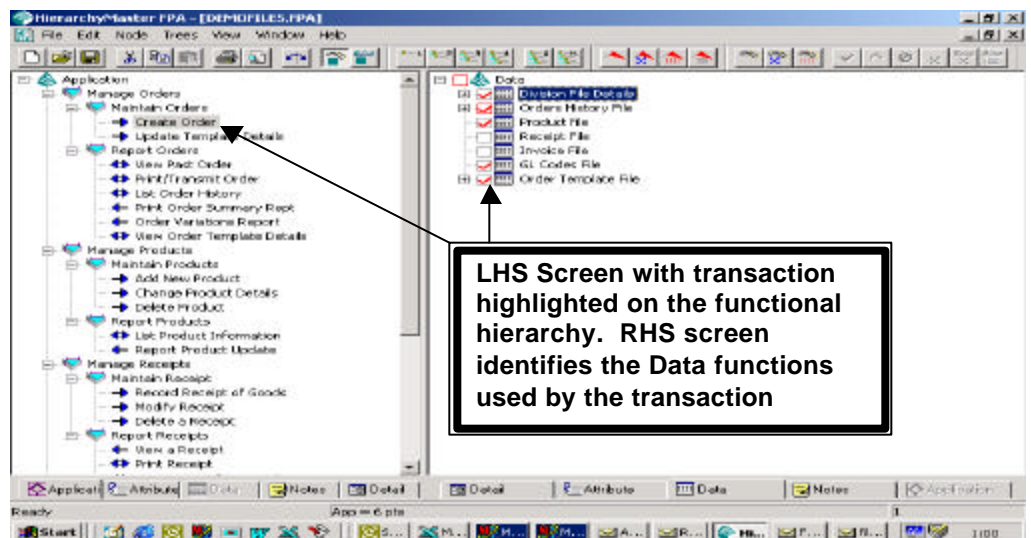
Comparing the *Software Sizer™* features to the current market leader the Function Point Workbench™ (FPW), the *Software Sizer™* was found:

- ❑ **More cost effective -** Allows the purchase of a single user licence at less than half that of the FPW minimum entry price
- ❑ **More functionality -** Provides all the functionality of FPW with a lot more of its own, particularly in the variety and flexibility of reports
- ❑ **More Information-counts can be documented** to more detail and are more auditable than in FPW, eg. notes and attributes can be attached to all (contin..)

"A tool written by the FPA experts that makes function point counting intuitive. Everything can be done on a single screen, reporting is versatile and interactive."

Contact us now for your free demonstration copy

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Continued from page 3 **Software Sizer™**

“The latest state of the art technology combined with a graphics tool to functionally model, measure and document your planned or existing software.”

- **Latest Technology User Interface** - Windows 2000 user interface. All counting tasks and reporting are done on one intuitive user view. Compared to FPW that uses a Windows 3.1 approach of multi-layering windows and overwriting the workspace.
- **Latest Technology Database** - uses a hierarchy components, transactions, files and attribute lists

- **Microsoft ACCESS™ database** - fully accessible for customising your own reports. FPW uses a Paradox database written for a Windows 3.1 environment
- **Latest Technology platform** - written for a 32 bit operating system as compared to FPW is for a 16 bit O/S
- **No field length limitations** - no limits on the length of names or text descriptions on any

- field FPW limits some user entry fields to only 8 characters
- **Ease of use** - displays over twice the number of transactions and files than FPW simultaneously on the same screen
- **More Control** allows the user to control when modifications to counts are saved or overwritten. FPW overwrites the count automatically without confirmation.

“COSMIC-FFP is proving to be an effective functional size measurement method in process and control rich environments”.

ACOSM - Accurate Early Cost Estimates for Switching Systems using COSMIC-FFP

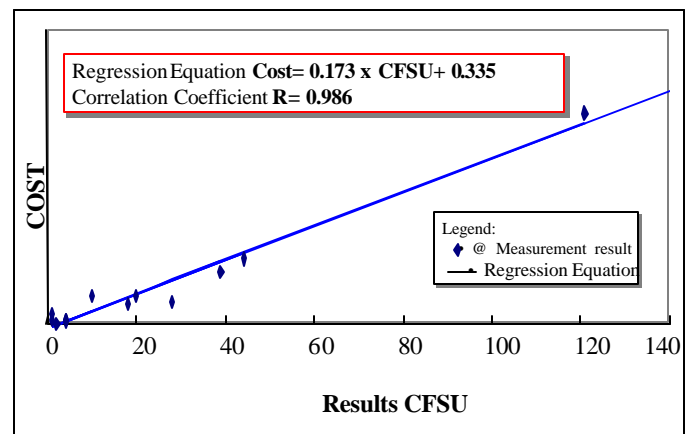
It has long been a problem for Organisations that develop embedded and real time applications that the traditional methods of functional sizing using IFPUG and MarkII function points do not provide a size that is effective for estimating project cost and effort. The COSMIC-FFP methodology for functional sizing was developed specifically to address the problem of measuring this ‘process and control rich’ software. The research results from the Research and Development Centre from the Japanese Telco - NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION (NTT) was presented at the ACOSM conference in Australia that demonstrated **an extremely high**

correlation between Enhancement project size (from 4 to 120 Cosmic functional units) and actual development costs (Regression coefficient $R^2 = 0.986$). COSMIC provides the means for early cost estimates enabling an organisation to decide whether to proceed with a planned project or cancel it. The authors (Shin-ichi

Nagano, Ken-ichi Mase, Yasuo Watanabe, Takaichi Watahiki, Shigeru Nishiyama) noted that the COSMIC-FFP method worked more effectively for predicting costs if the projects were larger than 5 Cosmic functional size units.

For more information contact: Shigeru Nishiyama nishiyama.s@rdc.east.ntt.co.jp For information on COSMIC-FFP: www.cosmicon.com

NTT found an extremely high correlation between Enhancement project size (from 4 to 120 Cosmic functional units) and actual development costs ($R^2 = 0.986$).



ISO Standards for the Software Measurement Process

ISD/IEC 15939 – Software Measurement Process Framework

This standard is in its final stage of international balloting, after 4 years in development and is planned to be publicly available to the IT community in 2002.

ISO 15939 provides a framework for the software measurement process that is conformant with the *Measurement and Analysis Process* defined in the ISO/IEC 15504 series of process assessment standards on which the CMMI and SPICE methodology are based.

It defines the activities and tasks necessary to successfully identify, define, apply and improve software measurement within a project or organisational measurement structure. It also provides standard definitions for measurement terms commonly used within the software industry.

Its intended users are software suppliers and acquirers. For example suppliers and acquirers could use it as a method for defining the software process and product measurement information exchanged as part of contractual performance requirements.

It provides a framework to define the components of an organisations measurement

program. It assists organisations in ensuring a measurement implementation strategy that is planned structured and self -improving.

Howard Rubens (*American Programmer 1993*) found that only 20% of metrics programs succeeded. Where success was defined as being when the metrics results assisted organisations in their process improvement and decision making and it was envisaged that the program would survive at least 2 years.

In our experience the reason for the 80% failure is because organisations have not used a strategy conformant with that documented in ISO 15939 . That is they have not developed the measurement process to be 'a mature capable process'.

The main steps in the ISO

15939 Measurement process are:

1. Establish and Sustain a Measurement commitment
2. Plan the Measurement Process
3. Perform the Measurement Process
4. Evaluate the Measurement Process

The evaluation of the Measurement process itself is about measurement and monitoring the process to ensure that it is meeting its objectives and to provide feedback into the "Measurement Experience Base". This is a repository of knowledge that acts as a source for improvement for the planning and performing steps.

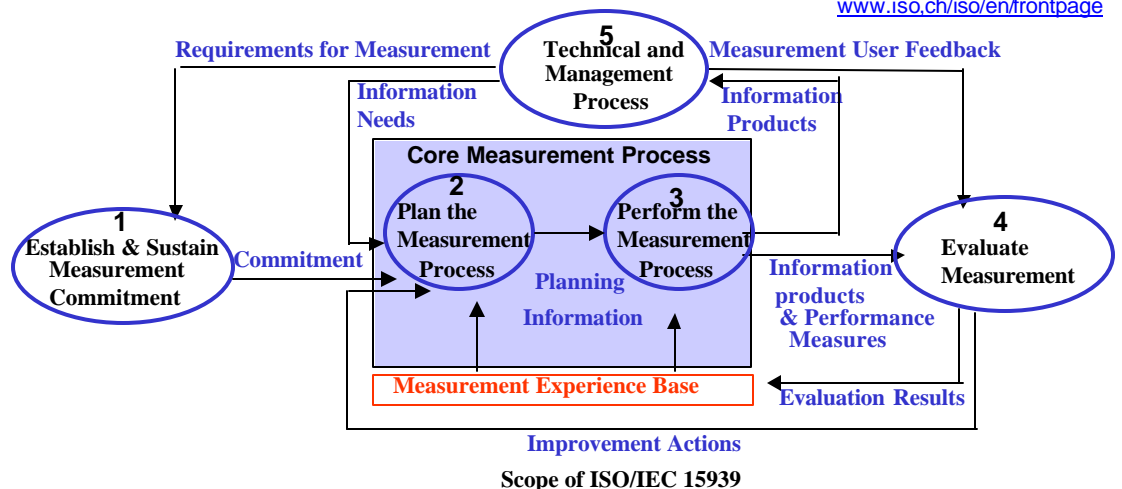
Total Metrics has a set of standard Function Point counting procedures set up as templates to 'kick-start' organisations in their implementation of the 'function point' measurement process.

These documented template procedures cover the FPA counting process, the roles and responsibilities, count documentation, collection, analysis, validation and reporting standards.

They cover steps 2, 3 and 4 of the Measurement Process Model

For more information about our FPA process templates please select Metrics Documentation Toolkit under 'Tools and Resources' at: www.totalmetrics.com

For information on ISO/IEC 15939: www.iso.ch/iso/en/frontpage



People factors and their Impact on Project Productivity

"ISBGS data confirms that People related factors such as Team Skills, Requirements Stability and Client Commitment have at least a $\pm 20\%$ impact on project delivery rate."

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About Our Organization...

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

Gerald Weinberg has been quoted as saying, "the three causes of project failure are people, people, people".

This view is supported by the latest research by Dr Chris Lokan (School of Computer Science ADFA) using the International Software Benchmarking Groups (ISBSG) data.

Dr Lokan reported his results at the ACOSM conference in Melbourne, November 2001 where he found the top three 'soft' factors impacting productivity were *people* related. Soft factors accounted for over $\pm 20\%$ of the productivity rate experienced on projects.

Dr. Lokan has reported in the past how quantifiable factors such as size and programming language can usually explain about half of the variation in project effort. The effect of programming language is to add around 4.5 hours to the productivity delivery rate (PDR). After programming language and size, the two most significant factors are industry sector and the development team size, each of which adds a around another 4.5 hours to the PDR.

Once these factors are accounted for the next most important factors are known as subjective factors or 'soft factors' since they are based on opinion rather than objective measurements.

The ISBGS Repository collects these 'soft factors' as 'descriptions' rather

than definitive ratings.

The focus of Dr Lokan's paper was to identify the soft factors most frequently identified as impacting project productivity and establish the extent of the positive or negative effect.

The most significant soft factor was found to be 'Team Skills' followed by "Stability of Requirements". For a productivity rate of around 7.8 hours per function point it was found that Team skills could have an impact of between +1.5 hours and -1.7 hours. Interestingly this correlates very closely with the figures from COCOMO which describe the impact of team skills cost driver of around $\pm 25\%$.

The Team Skills and Requirements stability factors were found to be statistically independent.

Client Commitment was the next most mentioned factor as influencing project productivity but its effect was less quantifiable.

Interestingly the last time the ISBGS Repository was similarly analysed in 1993, it was the same three factors identified. This illustrates how technology can move to different E-commerce environments, but the 'people' orientated factors stay the same.

Dr Lokan recommended

that before organisations use an industry median productivity rate for estimating their projects that they consider their projects' values for each of these top four influential factors, all of which are usually known at project planning stage.

For more information contact Chris Lokan: c-lokan@adfa.edu.au

Thought for the Month

Attitude is Everything

Your attitude to life is more important than facts. More important than the past, education, money, circumstances failures or successes or what other people think or say or do. It is more important than your appearance, or physical strength or skill, it will make or break you.

But attitude is something that we can control, we have a choice. We cannot change the past, only affect the future. We cannot change how other people behave or the inevitable, but we can decide what our attitude to it will be.

Life is 10% what happens to us and 90% how we react to it. **Our attitude is the most vulnerable part of our existence – yet it is also the only part of our existence over which we have total control.**