Welcome

Welcome to the new look ASMA Metrics Matters Journal. In the past you have received the Journal in hardcopy format. In keeping with the electronic age, we have introduced an e-Journal format for this publication.

The Metrics Matters e-Journal aims to:

- Become a key member communication tool (in conjunction with the ASMA website) by providing relevant and important industry information to members
- Inspire and motivate enthusiasm and cross organisational teaming by providing up-to-date and relevant information and resources and interesting industry journalism
- Focus on key member issues:
  - Future of the Software Metrics Industry
  - New tools and processes
  - Best practice
  - Career pathways and role models

In this e-Journal, we focus on the recent International Software Metrics Symposium (Metrics 2003) and the Australian Conference on Software Measurement (ACOSM 2003) which were presented at the same location in Sydney in September this year.

Photographs are courtesy of Ton Dekkers, Pekka Forselius and Jacky Keung.

Best Regards,

Sophia Poulos
Publisher

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**CHARISMATEK Software Metrics**
Aligning the Software Development Process with Your Business
Sydney Welcomes the Metrics 2003 and ACOSM 2003 Conference

By Sophia Poulos, IBM Global Services

The International Software Metrics Symposium (Metrics 2003) and the Australian Conference on Software Measurement (ACOSM 2003) were presented at one location in Sydney in September this year.

The Conference also included a series of workshops, Mahavir Luhach's workshop on “How to Conduct a successful IT Services Benchmark” is highlighted in this e-Journal.

Professor Ross Jeffrey gave the Welcome Address to the Conference.

“This year the conference is co-located with the Australian Conference on Software Measurement (ACOSM). ACOSM was first held in 1993 in Sydney…”

Key Note Speakers: Dieter Rombach (Germany), Pam Morris (Australia) and Shari Lawrence Pfleeger (USA).

“…reflects the increasing role that Australia is playing in the world community of researchers in the information and communication technologies…” Prof Ross Jeffrey

Key Note Speakers

The conferences' Key Note Speakers were Dieter Rombach (Germany), Pam Morris (Australia) and Shari Lawrence Pfleeger (USA). A common theme ran through the three presentations – Use of evidence to prove (or disprove) Software Metrics.

Day 1, Professor Dieter Rombach, Universitat Kaiserslautern, Germany. Dieter spoke about evidence based software engineering as a prerequisite for useful research and technical transfer. Refer also to Mark Exall’s comment on this Key Note presentation in this e-Journal (see Last Words…).
Day 2, Pam Morris, from Total Metrics, spoke on the area of Metrics Based Project Governance. Pam says, Project boards are being encouraged “to introduce better project governance to avoid costly over-runs and budget blowouts”.

The Victorian government has introduced the concept of the independent “Scope Manager” to facilitate this process. The Scope Manager’s role is to quantify and monitor the scope of a project right through the project life cycle. Pam demonstrates industry case studies to demonstrate the effectiveness of this type of project governance – to provide a “strategy for ensuring successful projects or providing early warning of projects in trouble”.

Day 3, Shari Lawrence Pfleeger, from Rand Corporation, focused on the role of evidential force in empirical software engineering. Shari asks, “What do we mean – “a technology works”” and also “What kinds of evidence do we need?”, and what is the credibility of this evidence.

Shari argues that “A body of evidence has evidential force, with each piece of evidence contributing to the whole”.

Shari provides several methods drawn from other scientific disciplines to assess arguments and supporting evidence, for example, Bentham’s Four questions, Shum’s approaches including Bayesian analysis and chains of reasoning, Multi-legged arguments from Bloomfield and Littlewood.

Shari recommends we design families of studies rather than focus on individual studies or small aspects of technology. For each study we need to “set criteria for confidence in evidence, categorise treatments and set outcome measures”.

Ordering copies of the ACOSM Conference Proceedings - contact ASMA on (03) 9723 5145

ASMA Web site
www.asma.org.au

May the Force be with you

Shari Lawrence Pfleeger: May the Force be with you

Shari Lawrence Pfleeger: May the Force be with you
Open Letter from the ISBSG President

by Terry Wright, Multimedia Victoria

IBM in Sydney hosted the International Software Benchmarking Standards Group (ISBSG) annual workshop that is a meeting of the heads of 10 international Software Metrics Associations. This group is responsible for maintaining a benchmarking database that is used by many organisations worldwide to assess their performance against outside organisations [Ed.]

Dear [ISBSG] Members

With the Sydney workshop now finished and the dust having settled the purpose of this e-mail is to document the agreed outcomes and to reflect on what it all means.

From my perspective I think the Sydney Workshop was a great success. We had some 15 people actively involved and ten countries represented. It had everything - intellectual stimulation, hard work, hard play, good running and some excellent and far-sighted outcomes. I believe the highlights were:

**Strengthening of Member Associations**

The membership base which supports the ISBSG initiative is growing stronger. Most of our associations are growing as a result of the value we can all now take from ISBSG.

In addition, our membership size continues to grow. There is much interest from new countries to also become involved. Examples of these are Korea and China. The concept of the ISBSG SwapShop which was developed at the Sydney Workshop should help to strengthen our associations even more. When developed, this will be a repository of resources (ideas, training courses, papers, etc) which members have offered to all other members to help them develop.

**Integration with Mainstream Software Metrics**

The idea of holding the Sydney workshop in conjunction with both the Australian Conference on Software Metrics and the 9th International IEEE Conference on Software Metrics proved to be of amazing value. Over three days we had the opportunity to listen to the academic arm of software metrics and they to listen to the industrial side. This was enlightening for us all and created some excellent new networks.

---

1 ISBSG – International Software Benchmarking Standards Group
Achieve Significant Outputs Relatively 'Easily'

A measure of our maturity and growing capability is the relative 'ease' with which we can now identify a need and respond to it.

As an example, at this workshop we identified the need to develop 'benchmarking standards' which will be available to guide people using our data as to what practices should be adopted to meet their particular benchmarking need. At this time there are no recognised standards as to how this should be done and, as a result, the 'benchmarking' results that are provided to business are often of little value.

As a major output of the Sydney workshop we agreed to a plan to develop the Benchmarking Standards which will be adopted at the 2004 Workshop.

This ability to bring together all those things required to make this happen in 12 months is now a powerful feature of ISBSG.

Re-positioning of ISBSG

For many years at our workshops we have debated the name and public image of ISBSG and always concluded that we are inaccurately perceived. At this workshop we ran a series of sessions which will be used to develop a Creative Brief for a branding company to help us to reposition the way we are perceived.

'Products' of Software Metrics as Commodities

Many of the activities at the workshop were focussed upon expressing the services that software metrics offer to business in terms of commodities.

The best example of this was the definition of the role of the Scope Manager - who they are, what they do, and their skills. This type of thinking is crucial if our products and knowledge are to become understood and receive widespread use by business.

OTHER IMPORTANT OUTCOMES

- Electronic distribution of ISBSG products
- Corporate subscription model
- 2004 Workshop in Bangalore, India

I thank everyone who participated in the workshop and made it such a success. I hope you enjoyed it as much as I did. I also thank both ASMA for sponsoring the event and for IBM Global Services for providing the venue.

All the best

Terry Wright

President, International Software Benchmarking Standards Group Ltd.

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Fax number: (61 3) 9651 9039
Mobile: 0412 262 890
(Extended) Functional Size Measurement Methods are also Applicable to Enhancement Projects

by Ton Dekkers, Sogeti Netherlands B.V.²

With some extensions to common size measurement methods like Function Point Analysis and COSMIC Full Function Points, one can tackle almost all IT activities. Furthermore, the same productivity rates (performance) can be used in enhancement projects also.

Global Procedure

Functional size measurement is an objective method to determine the size of an information system. The size is measured in units (fp or cfsu). The same type of unit is applicable when measuring the size of enhancements (release). Based on the requests for change (RfC) the functions involved are identified. When using FPA, the functions correspond with the elementary functions, and when using CFFP, the functions are recognised as functional processes. When all functions are identified (and measured), the size of the release is known.

During the impact analysis, the impact of the RfC’s on the functions is assessed and based on the enhancement type allocated to the functions. The number of units allocated to an enhancement is multiplied by a factor related to that type. When adding the results per type the weighted size is obtained. This size is the size required as input in the measurement model.

Maintenance (Definitions)

There are two viewpoints when looking at maintenance: the technological state of a system and the user value of the system. The system must comply with the technological requirements of the organisation. User value means that the software supports the practises and procedures to fulfil the needs of the user. So maintenance / enhancement can be defined as optimising the technological state and the user value in a controlled way.

The most common definitions [of maintenance] are from Lientz and Swanson [4]

Corrective maintenance is all activities needed to solve defects in the software. Not only defects in the software (programming bugs) but also errors in the design.

Perfective maintenance is enhancing the operational software. This means updating existing functionality based on RfC that are proposed by and agreed upon by the user and the principal.

Adaptive maintenance implies adding completely new functionality to the operational software. Additions are required because of new functional user requirements.

² This paper has been edited due to space considerations. Refer to the ASMA website for a copy of the original paper. Examples using COSMIC Function Points were also included in the original paper.
Estimating Corrective Maintenance

Defects, such as operational failure or the system is not functioning properly, need to be repaired immediately. Waiting for an estimate and a formal go / no go is undesirable and not acceptable for the organisation. The problem is that defects occur unexpectedly and interfere with other (important) activities and schedules. Of course, the size of the repaired functionality can be and has to be measured but one first needs to correct the defect and then do the measuring. Measuring corrective maintenance helps to get insight in two basic performance indicators: quality (defects per operational system per size unit) and mean time to repair (time per operational system / environment per defect). If these performance indicators are unavailable, time spent on corrective maintenance is a much easier indicator. A risk factor is determined based on hours spent on corrective maintenance: simply by dividing the size of the operational systems (portfolio) by the hours spent within a defined period of time. If the portfolio changes, new systems added or existing systems are replaced, the new required effort for corrective maintenance for the next period can be calculated. Taking this effort into account, scheduling activities like new development or enhancement time to delivery will be more realistic.

Identifying a risk factor for distinctive types of operational systems can refine capacity estimation. A distinction can be made between relatively new systems (less than one year operational), average aged systems and old systems (more than five years operational). Based on experience a system shows fewer defects after one year in production. When becoming of age (over five years) the enhancements influence the structure and stability of the systems and cause an increasing number of defects. One lesson learned: do not try making this distinction when first starting with measurement. This “method” to estimate corrective measurement applies to both function point analysis and COSMIC full function points. To measure the size of the repaired functionality, the method for sizing perfective maintenance is used.

Estimation of Perfective and Adaptive Maintenance Using FPA

Step 1: Determine size release

The functionality effected by maintenance has to be identified. This is done in the diagnostic phase. Based on the BfC the analyst identifies all elementary functions (Transaction Types: EI - External Input, EO - External Output, EQ - External Enquiry) and Logical Files (ILF - Internal Logical Files, EIF - External Interface Files) that are effected by the enhancement in one way or another. Also the “domino”-effect has to be taken into account: a change in an ILF effects all elementary functions that use (read, update) this ILF. Furthermore when an elementary function changes and there is a dependence between that elementary function and other elementary functions (e.g. function processes data from another function or provides data to another function), these functions are effected as well. The size of the release is the sum of the sizes of all identified functions and files. In this case the size is expressed in function points (fp).

Step 2: Allocate to enhancement types

The basic procedure to make an estimate in case of new development is to multiply the size of the application (in fp) with the productivity rate (hours/fp). The productivity rate is correlated to a repeatable process, the activities are carried out in the same way, using agreed upon standards and tools. Unfortunately maintenance is not the same as new development. In principal the activities are more or less the same, but the way the activities are carried out depends on the impact the RfC has upon the identified functionality. In the estimate the impact of the various “types” of enhancements must be visible and taken into account. The allocation to the effected functionality to the enhancement types is done during the impact analysis phase. The complexity of the elementary functions identified by FPA is classified as ‘low’, ‘average’ and ‘high’. The same classification is used for changes. The next step is quite obvious, use the same variables to classify the changes that are used for classifying the functions.
What are changes? In this approach changes include all items that are different then before:

\[
\text{Number of changes} = \text{number of items added} + \text{number of items changed} + \text{number of items removed}.
\]

For valuing the changes to the Logical Files (ILF, EIF), the number of changes related to the Record Types (\(\Delta\ RT\)) and the Data Element Types (\(\Delta\ DET\)) has to be identified. For the Transaction Types (EI, EO, EQ) the number of changes of the File Types Referenced (\(\Delta\ FTR\)) and the Data Element Types (\(\Delta\ DET\)) are relevant.

**Valuation based on number of changes**

After determining the number of changes the impact factor is selected based on the matrices. There is only one matrix defined for Transaction Types (EI, EO, EQ).

\[
\begin{array}{ccc}
\Delta\ FTR & \Delta\ DET & 0 - 1 & 2 - 5 & > 5 \\
0 & L & L & A \\
1 - 2 & L & A & H \\
> 2 & A & H & H \\
\end{array}
\]

A similar matrix is used for Logical Files (ILF, EIF). In this case \(\Delta\ RT\) is found not to have impact on effort, so only the first row is used:

\[
\begin{array}{ccc}
\Delta\ DET & 0 - 1 & 2 - 5 & > 5 \\
- & L & L & A \\
\end{array}
\]

When a Logical File changes of type following is agreed upon: EIF -> ILF use impact factor “Low” on the new size of the ILF, from ILF -> EIF no impact counted for.

**Example:**

The HRM department requests a birthday list of all employees in EMPLOYEE (first name, middle name, surname, department name, location and date of birth) sorted by birthday. The department name and the location have to be retrieved from DEPARTMENT.

*Measurement:* Type of transaction - External Output, number of FTR - 2, number of DET - 6, size - 5 function points

RfC: Add phone and e-mail to the list. Both are available in EMPLOYEE.

*Measurement:* Type of transaction - External Output, number of FTR - 2, number of DET - 8, size - 5 function points; \(\Delta\ FTR\) – 0, \(\Delta\ DET\) – 2, enhancement type – L.

**Valuation based on relative changes**

This valuation is described in "Function Point Analysis for Software Enhancement", the principles of the previously described approach apply to this method. The only difference is the determination of the variables that are used to value the impact.

\[
\%\ FTR = (\Delta\ FTR / \text{number of FTR before change}) \times 100\%
\]

\[
\%\ DET = (\Delta\ DET / \text{number of DET’s before change}) \times 100\%
\]

For this method there is one matrix defined for transaction types (EI, EO, EQ) …
... and one matrix for the Logical Files.

<table>
<thead>
<tr>
<th>% DET</th>
<th>&lt; 33.3%</th>
<th>33.3% - 66.7%</th>
<th>66.8% - 100%</th>
<th>&gt; 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
</tbody>
</table>

Changing file type (EIF <-> ILF) gets the impact factor 0.40. The number of fp that will be used to determine the mfp is the number of fp of the ILF (old/new).

Example: Birthday list
RfC: Add phone and e-mail to the list. Both are available in EMPLOYEE.
Measurement: Type of transaction - External Output, number of FTR - 2, number of DET - 8, size - 5 fp, % FTR – 0, % DET – 66.7%, enhancement type – I.

Step 3: Determine the size of the enhancement project

When enhancement types are allocated to the effected functionality (Logical Files and Transaction Types) the size is derived from the actual size in function points of each item. The enhancement type corresponds with the impact factor.
The aim of the impact factor is to define the correlation between the effort for a change and the effort of new development. On empirical basis the values of the various impact factors are defined. In the 10 years that the methods have been used there was no reason for changing the chosen values. Sogeti’s experiences refer only to its own approach based on numbers.

In the following table the impact factors used in both approaches are compared.

<table>
<thead>
<tr>
<th>Enhancement type</th>
<th>Impact factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sogeti</td>
</tr>
<tr>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Change</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Replace *</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove</td>
<td>Remove</td>
</tr>
<tr>
<td>Test (only)</td>
<td>Test (only)</td>
</tr>
</tbody>
</table>

* replace = remove + new

The impact factor is used to calculate the size in mfp for each item affected. The sum or the derived size of each item is the total size of the enhancement project.

Example: Birthday list:
Sizing: actual size - 5 function points, enhancement type – I, impact factor – 0.25, enhancement size- 1.25 mfp.

Example: Determining Size Enhancement Project with FPA

Using an example helps to understand how it works. Some remarks on this example:
allocating enhancement type is not part of the example;
The RfC proposed only changes that have effect on transaction types FPA-1 through FPA-6 and require a new transaction type FPA-7.
<table>
<thead>
<tr>
<th>Trans. Type</th>
<th>Before</th>
<th>New Change</th>
<th>Rem</th>
<th>Test</th>
<th>Total</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>A</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPA-1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>FPA-2</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
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<tr>
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<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
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<td>6</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>FPA-5</td>
<td>5</td>
<td>7</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
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<td>7</td>
<td></td>
<td>7</td>
<td></td>
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<td></td>
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<tr>
<td>FPA-7</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>7</td>
<td>0</td>
</tr>
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<td></td>
<td>4</td>
<td>13</td>
<td>7</td>
<td></td>
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<tr>
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<td>0.10</td>
<td>0.10</td>
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<td>mfp</td>
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<td>5.25</td>
<td>0.00</td>
<td>1.10</td>
</tr>
</tbody>
</table>

To be able to calculate the effort, a productivity rate is chosen: 8 hours/fp. The rate includes all activities to be carried out during new development.

Because the impact factor is weighting of effort related to new development, the productivity rate is also applicable for changes. In this case the base effort is 151 hours (18.85 mfp * 8 h/mfp).

**Application of Functional Sizing in Maintenance Projects**

**Outsourcing**

In this case a utility company has a operational system and a software services company has carried out the maintenance for more 10 years. Activities include software repair (bug fixing), software enhancement, help desk and knowledge maintenance.

The management of the utility company wants to get an insight into the performance of the software services company and to get a grip on costs. Sogeti was asked to assess the current contract between both parties and to draw up a blue print for a new contract between the two parties in which pricing would be based upon delivered performance.

The first step was to determine the size of the application. Because the system had been operational for almost 15 years and was not well documented, the sizing was done based on the user manual and the operational application itself. The size agreed upon was 6,900 fp. Time spent for sizing was 104 hours including preparation and reporting.

The performance analysis was based upon a comparison between some previous projects and the corresponding invoices, this analysis took about 40 hours. For drawing up the blue print of the new contract another 16 hours were needed. In total 168 hours was spent to get to achieve a contract that was acceptable to both parties.

The basis of the delivered performance was a productivity rate of 8.0 hours / fp. Because of the architecture of the system (modelling and reusable routines) the productivity rate was fixed at 6.5 hours / fp in the contract. The size of releases is the size according to the Sogeti method to measure enhancement projects. The invoice of the software services company should state the delivered size in mfp. If required Sogeti can audit the size of the enhancement project.

For the other activities performance indicators on a yearly basis were agreed upon. For knowledge maintenance, corrective maintenance and helpdesk the following performance indicators will be used: respectively 0.15 h/fp, 0.10 u/fp and 0.10 u/fp. If the utility company was to outsource these activities to the same supplier, one can expect synergetic advantages and work with an all-in indicator of 0.3 h/fp.

After one year the performance indicators will be reviewed and if necessary updated. After the first year the all-in indicator was updated to 0.35 h/fp.

Average maintenance costs decreased by almost 10% and customer satisfaction increased. The latter was caused by the fact that estimated delivery time per enhancement project was more accurate and realistic.

**Release management**

The IT department of the public organisation has to provide three releases a year. Due to budget limitations these releases have to be delivered with the available staff. The business departments and IT management were not happy with the release process, there were always problems getting the release ready in time. Most of the releases did not
contain all of the agreed functionality. This had an adverse effect upon the next release. Introducing functional size measurement could help to make the release process more manageable.

Three previous releases were sized with the Sogeti maintenance approach. With the size delivered and the hours spent the productivity rate was derived: 12.5 h/fp. Based on that, the number of (m)fp that can be delivered in one release was calculated. The available capacity was 128 man months per release, one man month is 120 hours (21.75 days * 8 h/day * 0.7 effective). To take summer holidays into account the IT department calculated with a man month of 110 hours for the summer release and 125 hours for the other three releases (fits nice with productivity rate as well). Experience in the last three releases showed that about 10% of the time was spent on maintenance of the previous release and about 15% was on “emergency changes”. The support of acceptance test and production test takes another 5%. This means only 70% of the time was effectively available for a release. In a regular release one man month equals 7 (m)fp, with 128 man months this is approximately 900 fp. The pilot release was limited to 800 fp.

At first the business departments showed little confidence and were not pleased. The users had to agree upon a smaller than desired release and were aware of previous experiences. When the pilot release was delivered without the usual stress and contained all the agreed functionality, the departments became very positive. The four subsequent releases showed the same results. Due to downsizing of the IT department the releases are now smaller but because of improved productivity (11.2 h/fp) the releases contain sufficient functionality and match the users expectations. All in all the users are more satisfied than before and the release management process is under control.

**CONCLUSIONS**

With the extensions to the size measurement methods, Function Point Analysis and COSMIC Full Function Point, described in this paper, measurement of an enhancement project is possible. The productivity rates from new development can be used in enhancement projects because the valuation of changes is relative to new development. Over 10 years of experience in applying the methods in enhancement projects has proved to benefit principal, user and supplier.

**References**


Ton Dekkers is a senior project consultant for the Engineering & Projects division of Sogeti Nederland B.V. He is responsible for the Expertise Centre Metrics and R & D in the area of Estimating & Performance measurement.
ASMA Products

ASMA has generated an extensive library of information on software measurement, establishing measurement programs, estimating and benchmarking. Much of this information is available for purchase in the form of books, tools, conference proceedings and reports.

Please note:
- Both ASMA and Australian Computer Society (ACS) members are eligible to purchase at the member price.
- All prices are in Australian dollars.
- All Australian buyers must purchase at the GST inclusive price.

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<th>Non-Member Price (GST Inclusive)</th>
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<td>A$253</td>
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<tr>
<td>Practical Project Estimation Toolkit</td>
<td>A$165</td>
<td>A$220</td>
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<td>The Benchmark - Release 6</td>
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<td>ISBSG Estimating, Benchmarking &amp; Research Suite Release 8</td>
<td></td>
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<tr>
<td>Single CD Pack</td>
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<td>A$1,820</td>
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Highlight on Practical Project Estimation Toolkit

A new Practical Project Estimation Toolkit has been produced by the International Software Benchmarking Standards Group (ISBSG). The toolkit introduces IT practitioners to software estimation concepts and approaches. The toolkit has been developed, in particular, for those practitioners who face the day-to-day challenge of deriving accurate and useful estimates of software project effort and duration.

The toolkit utilises data collected by ISBSG from approximately 1,000 software projects. It presents several different estimating techniques and describes how to utilise these techniques to generate effective software project estimates. In addition, the toolkit includes:
- Discussions of actual estimation experiences from contributors to the ISBSG project repository
- Indications of what project characteristics significantly impact upon software productivity
- Insights into the accuracy – or lack therefore – of different estimation techniques
- An analysis of the IT industry’s past experiences with estimation – revealing what works and what doesn’t.

The CD that comes with the toolkit is an ‘estimator’s goldmine’. Included on the CD are:
- A macro estimating tool supporting both regression and comparative estimation techniques
- A useful subset of project data drawn from the ISBSG repository
- An ISBSG project repository demographics report.

Whether you are looking for a quick indicative estimate for a feasibility report, a detailed estimate for a quotation or capital expenditure request, or a means to standardise and formalise your quoting procedures, this book and CD provide the tools you need.
How to Conduct a Successful IT Services Benchmark

By Mahavir Luhach, Westpac IT

This paper describes the complete process of benchmarking from identifying the need to its implementation and provides some guidelines for successful completion of a benchmarking study.

Benchmarking is the process of comparing the quality and cost of services delivered with other comparable organisations as well as industry best practice. A benchmarking study typically involves the following steps:

- Defining the benchmark objectives
- Scoping the benchmark
- Selection of the benchmarker
- Mapping to the benchmarker model
- Data collection & verification
- Peer group selection
- Review of results

A benchmark could be performed for a number of reasons. The objective of the benchmark also depends upon whether it is for in-house or outsourced services. Benchmarking is not an end in itself so it needs to be carefully considered how the benchmark results are to be used. Some of the common objectives for performing the benchmarks are the following:

- Establish cost and quality/service level prior to outsourcing
- Use in price negotiations-outsourcing/renewal
- Check if an outsourcing deal is good value for money
- Understand the cost drivers
- Clarify the scope of services
- Compare cost and quality of IT services to peers or best organisations
- Identify best practices and productivity improvement opportunities
- Monitor IT productivity improvement programs

Any of the following IT services could be benchmarked depending upon the objectives of the benchmark and the potential benefits.

- Application development
- Application support
- Mainframe
- Midrange
- Distributed computing
- Help Desk
- DASD
- Managed Network Services

Before proceeding with the benchmark, it needs to be considered whether relevant data is available.

The next step in the benchmarking process is to agree on the scope of the benchmark with all the stakeholders and decide on all inclusions and exclusions, e.g., only central site is to be included or all sites including remote server locations. Agreeing on the issue resolution process is also important particularly if outsourced services are being benchmarked.
One of the most critical steps in the benchmarking process is the selection of a suitable benchmarker. There are a number of organisations such as Gartner Group, Compass Consulting, Meta Group etc., which carry out IT services benchmarks.

However each of the benchmarkers have somewhat different models and databases with varying degrees of detail. Their data requirements and processes could be different as well.

A suitable benchmarker needs to be selected to achieve the unique objectives of the particular benchmark.

Some of the considerations in selecting an appropriate benchmarker are:

- Benchmarker’s model for the IT service should closely match with the scope of the benchmark to be carried out.
- Benchmarker’s database should be relevant, current, accurate and have sufficient data points.
- Consider the process followed by the benchmarker and the level of detail provided in the final report.
- In the case of an outsourced service there may be contractual issues to be considered and whether the benchmarker would participate in negotiations with the vendor.

The next step in the process is to map the scope of services to be benchmarked with the benchmarker’s model. It is unlikely that all the lower level service components of a benchmarking study would exactly match with the benchmarker’s definitions in their model. A process needs to be developed to deal with service components not in the benchmarker’s model. If some of the service components are in the model but not applicable to the benchmarking study then the benchmarker needs to exclude their costs from the comparison.

Important considerations for data collection are that it should be current, relevant to the study and accurate. Data collection effort must be minimised by automating the data collection process, i.e. extracting data from existing measurement systems.

One of the difficult decisions in the benchmarking process, particularly in outsourcing situations, is the selection of the peer group for comparison and whether the comparison is to be based on average, top decile or top quartile.

Some of the factors to be considered in selecting a suitable peer group are:

- Type of industry
- Size
- Geography
- Technology environment
- Complexity, response time and service levels

One approach used by many organisations is to compare the performance against a selected peer group as well as the best performing organisations in the benchmarker’s database, sometimes referred to as a reference group.

Finally the benchmarking study results should be presented to the sponsor and other stakeholders and should be reviewed in the light of study objectives.

The real benefits from the results of the benchmarking study are obtained when these are utilised to improve and monitor performance.

― According to Meta Group, benchmarking is considered one of the most valuable services available to businesses today…"
### ASMA NSW Meeting

By Sophia Poulos, IBM Global Services

An ASMA-NSW meeting was held in tandem with the Metrics 2003, ACOSM 2003 conference. David Card (USA), Tony Rollo (UK) and Ton Dekkers (Netherlands) were invited to speak to the topic of the future of Software Measurement.

David Card suggested that there has been a growing interest in Software Metrics which has been largely brought on by the growing interest and implementation of the measurement methodologies such as, CMMITM, Balanced Scorecard, ISO 15939, ISO-9001, 6 Sigma, PSM and others.

He also highlighted the need for measurement professionals to be knowledgable on statistical and measurement principles. Too often the focus of training is on measurement tools (which of course, is not equivalent).

David suggests implementing more models of industry and academic collaboration.

Tony Rollo and Ton Dekkers talked about their experience in the take up of software measurement in Europe and the UK and concurred with David’s assessment that there is certainly growth in the software measurement industry – welcome news for us all!

### SUMMARY

- Prepare for benchmark
- Manage as a project
- Sponsor and stakeholders commitment
- Clearly-defined objectives
- Up front agreement on process
- Selection of peer group & reference group
- Handling of the benchmark results
- Right resources – technical, contracts, finance, vendor
- Select suitable benchmarker
- Focus on opportunities for improvements
- Validated correct and relevant data

David Card, Tony Rollo, Ton Dekkers

David Card, Tony Rollo, Ton Dekkers
Conference Photo-Journal

Here are a selection of pictures from the ACOSM 2003 and Metrics 2003 conference. (Photos courtesy of Ton Dekkers, Pekka Forselius, Jacky Keung)

Conference Room

Morning Tea: Hugo Renhassar, Peter Hill, Paula Holmberg

ISBSG Panel Meeting: (from left) Paula Holmberg, Pam Morris, Chris Lukan, Hugo Renhassar

Panel Discussion: Judy Bamberger, Dietmar Pfahl

Shari Lawrence Pfleeger, Ross Jeffrey

Vendor Stand: Robyn Lawrie
About ASMA


STATEMENT OF PURPOSES

AUSTRALIAN SOFTWARE METRICS ASSOCIATION (Incorporated in ACT)

The Purposes of the Australian Software Metrics Association Incorporated in ACT (hereinafter referred to as “the Association”) are to:

1. Act as a forum for members to share Software Metrics and Measurement experience, knowledge and techniques.
2. Raise the level of awareness of Software Metrics and Measurement in Industry.
3. Be a local point for Software Metrics and Measurement in Australia.
4. Pursue and conduct programs, projects and seminars which have a relationship with the general activities of the Association.
5. Co-operate with, or assist any organisation having objectives and purposes similar to those of the Association in any manner which may further the interest of Software Metrics and Measurement in Australia.
6. Collect data on the Association's activities and disseminate information to members and other appropriate bodies.
7. Arrange meetings for both members of the Association and other interested members of the general public.
8. Do such things as are incidental or conducive to the attainment of the above purposes and the exercise of the powers of the Association.

ASMA is an association created to support and foster interest in the software metrics industry.

Be a part of ASMA. ASMA is always looking for speakers willing to share insights at our monthly meetings or at our next Conference. Contact your national or state representatives for further details.

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- Methods and techniques.

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Last Words…

Review of Metrics Keynote: Evidence Based Software - A Practitioner's Perspective

By Mark Exall, Centrelink.

Why do we have software metrics and does it add any real value to the business of IT?

I have worked as a function point analyst with Centrelink for almost two years. That function point analysis role has existed for many years within Centrelink, yet I believe that as an organisation, we are on the verge of getting much greater value from our metrics capacity than we have to date. It seems that software metrics is catching on!

Although the keynote speech by Dieter Rombach focussed on evidence based software, it also touched on many other issues. He suggested the software engineering discipline is still maturing in the broader engineering world. Also, there is a long journey ahead before software engineering reaches its potential.

Other engineering fields are disciplined, founded upon the rules of physics, and based on evidence accumulated over many decades. Software engineering, however, lacks much of the experience, rules and discipline exhibited in other engineering fields. Many players in the software industry turn away from the lessons to be learnt from other engineering disciplines. These observations by Dieter cannot be ignored readily.

The evidence is there in the form of poor programming through a lack of coherent standards for writing simple and well-structured code to make maintenance and enhancement tasks more straightforward and a lower risk activity. It is also evident in the poor application of methodologies for building software.

The solution? Education, further research and the transfer of industry knowledge. While this is informative, where do we fit in as metrics practitioners? We cannot influence the way systems are designed or written. We cannot enforce a particular methodology upon a software project. We cannot guarantee that the right people will take notice of the evidence that we provide. All we can provide are measures of relative performance and we may in turn indirectly influence organisations to pursue better practices.

Dieter presented a theory on empirical evidence creation to generate a repository to be used by the wider community. For me, the discussion moved into the realms of academia here and exposed a gap that exists between academics and practitioners. While it may be a noble cause, I am seeking a practical tool that is usable now!

There may be merit in the application of Dieter’s model for combining empirical study results to expand our knowledge base. Yet, as a practitioner, I see we already have a useful practical tool in ISBSG. As more contribute to ISBSG, that knowledge base can only improve.

Dieter’s message was valuable on many levels. It provided a stocktake of where the industry is, where it should be heading and some of the challenges we in metrics face in getting there. As a practitioner, I am very positive about the direction software metrics is heading and am confident that the body of evidence we have will continue to grow in size and quality.