



**Presents
An IT Metrics and Productivity Journal Special Edition**

**Focus on Peter Hill
President, International Software Benchmarking Standards Group
A CAI State of the Practice Interview
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Biography of Peter Hill:

Peter Hill has been in the Information Services industry for more than thirty five years and has acquired a broad range of experience covering a number of industries including manufacturing, distribution, freight and aviation. He has been a speaker at conferences in Australia, New Zealand, Finland, UK, Spain, China, and Malaysia and is currently functioning as Executive Director for the International Software Benchmarking Standards Group (ISBSG).

Peter has compiled and edited five books for the ISBSG. He runs courses on Project Management, with an emphasis on software acquisition projects and on the practical use of software metrics. He is also a Director of Software Engineering Australia, Resonate Solutions Pty Ltd, and a Fellow of the Australian Computer Society. He is a past Chairman and Secretary of the Victorian branch of the Australian Computer Society. Our interview between Peter Hill and Michael Milutis, the IT Metrics and Productivity Institute's Executive Director, was conducted in October of 2005.

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CAI: Could you tell us a little about yourself, the path your career has taken, and what you are currently working on today?

HILL: I actually started out back in the mid 1960's as a humble programmer, coding in assembler on an IBM system. That was in Australia. I then moved into IT management, heading up IT departments both in Australia and in New Zealand. That led, in turn, to my acquiring ownership positions in two software companies, first in New Zealand and then later in Australia. In 1979, I returned to Australia and about 10 years ago, I sold out my shares. I am currently working as Executive Director for the International Software Benchmarking Standards Group (ISBSG). I've been with the ISBSG now for seven years.

CAI: What exactly is the ISBSG and how can it make life easier for software and IT organizations around the world?

HILL: The mission of the ISBSG is to improve IT management through the creation and exploitation of software engineering data repositories. My job is to make sure that we acquire and exploit this data and ensure that it is accurate, verified, and up to date so that it can remain representative of current technologies and useful.

The most important distinction between the ISBSG and commercial metrics organizations is that our data is public- we make it available to you. Most commercial organizations or consulting firms might do benchmarking, but you will never get to see the data that they used in the benchmark. A second major distinction between the ISBSG and other organizations is that the ISBSG is not-for-profit. It's an open organization. We are able to achieve this through international cooperation. In fact, we have member organizations in 11 countries, and those organizations are also not-for-profit. This is very important because if we had any major commercial influence in our organization, it could potentially impact the integrity of the data.

CAI: Given all of the advances in methodologies and CMM tools we still have data pointing to the fact that IT software productivity has remained flat for 10 years. Does your data confirm this? If so, do you have any thoughts about why that may be?

HILL: I agree with your premise. The ISBSG data bears it out as well. As to why this is the case, a couple of things stand out.

The first thing our data shows is that there has been a lack of productivity gain in relation to case tools. We've looked at this, and what we've surmised is that it might not be the case tools themselves that are a problem. It is either a lack of training or a lack of sufficient experience with the tools. People seem to be getting switched to the new silver bullet before they have had enough time to get up to speed on the old one. They also appear to be leaving their organizations and taking positions elsewhere, either internally or externally, where they are then forced to begin learning new tools all over again.

The second thing our data shows is that, since the mid 1990's, there has been much more of an emphasis on time to market, on speed of delivery. And getting the product out the door fast has had an adverse impact on productivity.

CAI: How can the ISBSG data help organizations address this productivity issue, as well as some of the more chronic problems- cost overruns, schedule overruns, and outright project failure- that seem to continually plague the software industry?

HILL: As an industry in general, we keep repeating history and making the same mistakes. That's where these chronic problems have their origin. That's also why the ISBSG was established - to help the software industry start learning from its history. In order to be able to learn from history, however, one needs to first construct, as

other engineering disciplines have, an organized body of knowledge to draw from. If you want to build a house, you just don't start laying bricks. You start out with a body of knowledge specific to the building industry that will allow you to construct realistic estimates regarding size, duration, and expense. Consequently, if the ISBSG can provide a history of software engineering data, the entire software industry will have a body of knowledge at its disposal that can be used to help overcome some of these chronic problems.

Our data is primarily used for estimating and that is interesting because, as our name reflects, it was first thought, when our organization was originally established, that people would be interested in our data primarily for benchmarking purposes. And it is certainly heavily used for that. However, the main use in recent years has been for estimation. People want to avoid the cost overruns and the schedule overruns and if they can accomplish this through estimation, then the historical data provided by the ISBSG is a real advantage to them.

But the data is also used for project management. You can use it, for instance, to determine if specifications are complete. You can use it to determine the normal time period for phases in a project. You can also use it for infrastructure planning around various development platforms. By way of example, what if you had not used JAVA before but you wanted to know what to expect in terms of performance? By looking at our tables, you would be able to get an indication of the productivity to be expected from developing in JAVA.

CAI: How would you characterize the awareness out there about this resource that the ISBSG has constructed? What would you say your reach is within the industry?

HILL: In the total scale of things, our reach is still quite small. However, with the increase in our membership in recent years (our newest members are India, Korea and China) we are seeing a dramatic growth in awareness and also, a shift in the structure of our membership. In the past, for instance, our members tended to be software metrics organizations. Now we're talking about national IT organizations like NASSCOM and the Software Process Improvement Union of China. The latter boasts 62,000 members. The former represents 90% of the Indian IT sector.

These countries are really tackling IT in a serious way. If they start making any kind of effort to learn from what's happened in the past, we are going to see our reach increase enormously in the next 2 to 3 years.

The ISBSG also encourages very large software engineering organizations to become corporate subscribers. They seem to be leveraging it primarily for estimation and internal project consulting but there's also been a fair amount of use made in outsourcing related negotiations.

If I had to summarize, I would probably break our reach down into four main groups. The first group represents our traditional beginnings. These would be the software

metrics professionals. This is an extremely well catered to group. They are also well aware of what we've got. The second group consists of large software engineering companies such as IBM and Infosys. The third group is made up of all the academics, researchers, and students who make use our data for their scholarly work. Finally, there is a fourth group, one that we are currently attempting to extend our reach into, which consists of all the people who are actually funding IT projects, e.g. senior corporate management, CIOs, IT customers, etc. We would like to do much more for these people on the "demand" side.

CAI: The ISBSG maintains two main repositories of software metrics data: a development and enhancement repository and also, a maintenance and support repository. Could you give us some more details about these repositories? For example, what kinds of metrics are tracked? How is the data acquired? What is the growth rate of the database?

HILL: Regarding the maintenance and support data, this is actually a new repository for us. We're still in the early stages with this, and it's a much different market than the people who want to know about software development and enhancement. We currently have less than a hundred applications, so this really represents a growth area for us.

Our original repository, the one that covers software development, enhancement, and re-development, has data in it from more than 3,800 projects. In recent years, and this is another indication of reach, we've seen quite an increase in the number of projects being sent to the repository. Specifically, we've seen between six and eight hundred projects come into the repository each year, for the past 4 years.

We get data into our repository in several ways. First of all, there are questionnaires available on the web site. These questionnaires are primarily used by companies that are thinking about collecting and reporting on their own data and are looking for ideas about what they should be collecting. That's one source of data. Another source, our major source, consists of in-house metrics databases and project management tools that collect metrics. In these cases, it is consultants who send us the data after getting the appropriate permissions.

All of the data in our repository is anonymous. No one can find out where the data comes from. Our administrator, who is remote, removes all of the identifying data and then provides a unique, generic identifier for each project before it comes into the ISBSG to be assessed and added to the repository. That's a security issue because many people are concerned about whether or not somebody will be able to get access to their data. We can guarantee that this is not possible. I don't even know where the data comes from.

CAI: How would you describe the practical value of this data?

HILL: In practical terms, and at the highest level, I would say that the data contributes

to the maximization of IT ROI by helping organizations better understand the risk factors they face on projects and by helping improve overall project performance. The data also helps managers and stakeholders, both internal and external, establish realistic expectations so that we can have mutually satisfactory contracts about what will be done in what amount of time.

Perhaps most importantly, the ISBSG data serves as a general 'hard facts' repository for management. For example, we all know that putting more people on a project won't necessarily get it delivered more quickly. But with the hard data at your disposal, you now have the ability to actually prove that. And you can get that data from the ISBSG repository. You can put that in front of your manager. You can now explain that this is not a practical way of solving the problems facing you and why. That's just one example. Another example might involve being given a deadline for delivering a particular IT project. With the ISBSG repository, you can now take a look to see if anyone else has ever done this kind of project before. And the ISBSG data will be able to give you a reality check. For example, maybe after reviewing all of the data on similar projects you find out that only 4% of them have ever been delivered in the sort of time frame you are facing. That would be incredibly practical information.

It all comes down to that old project management trio of time, cost, and functionality. How much do you want? How quick do you want it? How much is it going to cost? The ISBSG data can help you get that balance correct.

CAI: You mentioned earlier that many organizations make use of this data in outsourcing related negotiations. Could you elaborate?

HILL: I can actually give you a specific example here. There was an organization in the US that was thinking of outsourcing their IT. It was a case of domestic outsourcing, not offshore outsourcing. In any case, the IT organization thought that they should perhaps find out what their performance was first. They convinced management of the importance of this. After conducting their assessment, they turned to the ISBSG repository for benchmarking purposes. That data, the ISBSG data, allowed them to empirically conclude that outsourcing was not going to be a good idea. Their internal performance was simply too good; they were not going to get an advantage from the outsourcing.

The ISBSG data can also help establish performance targets in an outsourcing contract, both for the supplier side and the customer side. That's because you can look at the industry data, find out what is at the top end of the industry, and then set your expectations accordingly. In fact, one of the state governments here in Australia uses the ISBSG data to establish the reasonableness of quotes for IT projects. They don't go out and ask for one big large quote for the whole job. They specify the platform, the language, and some major characteristics of the project, and then they ask for quotes in terms of dollars per function point. Having access to the ISBSG data enables them to do this.

CAI: How common is this approach, the 'dollars per function point' approach?

HILL: It's quite common in the state of Victoria. And people in Finland have picked up on it too, as well as some people in Japan. The Victorian state government has actually made its methodology, known as "southernSCOPE", available on their website. In Victoria, the government uses the ISBSG data to establish whether or not the quotes that come in are reasonable. And that doesn't just mean they are able to determine which quotes are too high. It means they can also determine which quotes are too low. For instance, what if an organization is quoting an effective productivity rate of 5 hours per function point when a comparative project in the ISBSG repository averages 9? You would have to wonder whether or not these people were incompetent or possibly even dishonest. So it helps to identify the rogues and the fools.

This approach has helped the state of Victoria reduce cost overruns. They looked back and did a survey and concluded that they had reduced their cost overruns from an average of 84 percent to just 4 percent. That's a huge decrease. How were they able to do this? The reason is that they now had a handle on customer functionality expansion. Every time their customers asked for additional functionality, the state was able to invoke the dollar per function point formula. Consequently, their customers ended up with just their core functionality, delivered on time and on budget. Both the supplier and the customer were under control.

CAI: What advantages or disadvantages do organizations have in tapping into external repositories, like those maintained by the ISBSG, as opposed to gathering their own data?

HILL: Without a doubt your own data will always be the best. There's no doubt about that. If you collect your own data, and keep in mind that there are many organizations that do not, then your own data is going to be the most valuable from the point of view of future estimation. However, even in these cases, external data can still give you valuable benchmarking opportunities and comparisons.

If you do collect your own data, you might also want to consider sending it to us for inclusion in the repository. In this manner, you will acquire a subset within the master repository that you can, in turn, line up against the international collection. That will give you the best of both worlds.

CAI: If an organization doesn't really have the processes or the tools in place to properly gather data, how can the ISBSG help them get started?

HILL: Actually, there are very few organizations that collect their own data. That's the unfortunate reality. Consequently, the majority of companies come to us precisely because they don't have their own data. They come to us to make use of the industry data, either for conducting reality checks on quotes or for estimating or for reality checking their own estimates. You should always be estimating in at least two ways and then comparing your estimates to sort out the differences.

But even for those organizations that are quite mature in terms of metrics collection, if they are moving onto a new development platform, or if they are developing something in a new language, they won't have any corresponding history. In these cases, the ISBSG database performs a very valuable service.

CAI: You mentioned that most organizations don't properly gather their own data. For organizations that want to start moving in this direction, what advice would you offer?

HILL: I wouldn't really focus, initially at least, on processes and tools. The primary thing that you need to make sure you have in place is a desire to improve. You have to have the right culture. Having been through this myself in a growing software organization, you have to be able to say, "We want to do this, we want to improve, who's with us, and who's not?" So many organizations think they'll start collecting metrics or improving their processes in order to get to CMM Level X or ISO standard Y and it's just because they want to put the certificate on the wall. They don't really want to improve their processes, they haven't really thought it through, and they certainly haven't thought about bringing their people with them. Consequently, they fail. So the right culture and a genuine desire to improve have to be the primary things.

Once you have this in place, you might want to make use of the goal-question-metric approach. What's your goal? What questions do you have to ask to get there? What metrics do you need to collect to answer these questions? By all means, have a clear objective, keep it simple, and make sure to communicate to everybody in the organization what you are doing and why. Measurement is not an end in itself.

Stay disciplined and only measure the essentials that you must have to solve the questions or the goals that you set out to achieve. Start simple in this manner, get some results under your belt, and then build out from that point.

Questions? Suggestions? Comments? Please contact the IT Metrics and Productivity Journal Editor at michael_milutis@compaid.com