Why choose COSMIC?

Many organisations are now turning to Quantitative Measures in general, and Functional Size Measures in particular, to manage software development projects, either in house or outsourced. In doing so, they are asking "Which of the available measurement standards should I use; which will be best for my organisation in the long run?"

In selecting an FSM one needs to be mindful of a minimum set of requirements which, on reflection, amount to common sense once the implications of using FSM are understood.

Firstly, how applicable is the standard? How does it suit my purpose? The answer to this requires that the purpose and future of FSM in the organisation is clear and the desired benefits agreed among all stakeholders.

Secondly, where is the expertise to help me understand all I need to know and do to be effective with this technique? This will include availability and cost of expertise, training, support.

Thirdly, I have to consider the degree to which I need the output from this technique to be transferable to other suppliers, other environments and other applications. Being locked into something that is limited in any of the above will make a good return on the investment more difficult.

Fourthly, I need to know this is some sort of absolute measure that truly reflects what it is I want to buy or commission from the supplier and communicates this exactly. I have to have a consistent and reliable knowledge of the actual size of the projects I am planning across all my estate and for the foreseeable future.

Of the many standards, most are proprietary, localised or perhaps academic. In the EU, there are four internationally-recognised standards which are candidates for consideration.

- IFPUG, which is an international consortium, is the longest established and has an international user base and is widely supported.

- COSMIC which is also international, has a growing user base and plenty of support in the EU with growing support worldwide. It is the latest development in FSM.

- NESMA is the Netherlands standard which is used there but now has a declining user base.

- Mk II is mainly used in the UK government and not much outside.

I am going to eliminate NESMA and UKSMA as they have insufficient acceptance and support on the wider scene and ultimately will suffer from lack of transferability. This may seem a slightly cavalier approach bearing in mind that good work has been done using all of these standards. However, the demands of future system development have overtaken them. For a fuller account of the differences, see the excellent article by the late Grant Rule at http://www.smsexemplar.com/fsmcompared.

So we are left with a choice between IFPUG and COSMIC. I am going to argue that COSMIC is the superior standard because it measures software in terms the buyer or commissioner of the work usually understands and can be used directly by the business community for whom it has the greatest benefit.

COSMIC only deals in functional processes and employs a simple data movement model. These are understandable by anyone in the business as well as technologists. This means that software can be sized from requirements documents without consideration of the program design, merely knowledge of the data movements. The same does not apply to IFPUG where knowledge of the structure of the processing, program design and more must be considered. As such, a different and more comprehensive skill level is required, one not usually found in a business analyst. Consistent, simple rules apply in COSMIC whereas in IFPUG the rules will change depending on, for example, the elementary process type.

It is quite feasible, indeed normal, for the business or the buyer side of the operation to accurately size a project in COSMIC prior to it going out to tender or being put into the internal job queue. This sets expectations of cost and timescale up front and greatly facilitates planning and budgeting. So COSMIC, being understood by both buyer and developer, becomes a vital communications tool between them and along the entire value chain.

Very important is the use by COSMIC of a ratio scale. In COSMIC, the scale of size is a linear integer scale from one to infinity where four is twice as big as two and half as big as eight and so on. It may seem surprising to state this, but IFPUG uses unequal intervals between low and average and between average and high and care needs to be exercised in delivering an accurate count. A good reason why IFPUG is best left to IFPUG experts. COSMIC, however, meets the fourth requirement exactly: ie it provides an absolute measure that truly reflects what it is I want to buy or commission from the supplier and communicates this exactly.

The two standards have a major difference in their ability to handle functionally in large projects. COSMIC has no sizing limitation whereas IFPUG has sizing limitations dependent on a number of conditions. In general, it will not size accurately beyond about 3,000 FPs. Fortunately modern practice and environments place the emphasis on numerous small projects so under some circumstances this is not an issue for IFPUG. However, traditional environments still persist, and seem likely to do so for some time, and so sizing of functionally large projects is still a major requirement. In this context, COSMIC will also handle complex and large architectures where IFPUG faces difficulties. Both environments almost always co-exist within an organisation and as it would seem unreasonable to have two standards, a choice has to be made. Here, COSMIC is the obvious choice.

For those involved with real time software, COSMIC is the only effective tool as IFPUG is cannot be used effectively in Real Time.

Let us now turn to the availability of expertise in the two standards. IFPUG has had the greater acceptance over a longer period than COSMIC and this is reflected in the relatively large number of organisations that train and consult in it. COSMIC also has excellent support in the EU and beyond and the user community is growing fast. There is no expertise capacity limitation apparent in applying IFPUG or COSMIC. In practice there is little difference between the two and expertise and training is readily available at normal market prices, so both standards meet my second requirement for availability and affordability of expertise.

We have considered transferability only briefly. Both systems may allow sizes and sizing practice to transfer from one supplier to another assuming both are trained in the respective standard. For those users who are contemplating moving from IFPUG to COSMIC, the issue of the knowledge pool built up in IFPUG has to be considered. It represents a considerable body of knowledge and is of great value to both

the developer and the buyer. It so happens that over the range in which IFPUG is accurate, the numeric counts achieved by the two standards are very close, usually within about 5%. So in moving to COSMIC, the knowledge will not be lost and my third requirement is met.

Lastly, let me summarise the COSMIC advantage. It sets new standards in ease of use, applicability and accuracy over any previous method of Functional Size Measurement. It is the natural system for any person involved in any stage of the software development and delivery value chain from planning, commissioning and developing to supporting the resulting software. It is an easily understandable tool without vices. As such it provides a vital means of communication amongst all those involved along the value chain.

Philip Standing

8/6/2012