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In reality, therefore many more copies are in circulation than these numbers indicate.

The fastest-growing numbers of downloads by language over the last eight months have been Chinese and German, whilst the fastest-growing number of downloads of a Guideline is that for ‘Use of COSMIC FSM to manage Agile projects’.

Since it was published just under a year ago over 700 copies have been downloaded. Truly, all the evidence suggests that the COSMIC method is now very rapidly spreading and gaining acceptance.

Polish Social Insurance institution benefits from COSMIC

A press statement from ZUS ZUS (Zakładzie Ubezpieczeń Społecznych), the Polish national social insurance institution, described the benefits it has got from using COSMIC software size measurement in its contract with the supplier that supports and enhances its software.

ZUS, which has an annual IT budget of 75 million Euros (US$ 96M), now has two years experience of using COSMIC to calculate the size of modifications to its software systems. As a result, ZUS can prove that it has increased its cost efficiency and improved its ability to monitor its budget under the contracts. Further, ZUS states that over the last year it has improved the transparency of its IT projects and can better ensure they are adequate for its needs.

Further actions are now being taken to standardize the way suppliers and software integrators use COSMIC functional sizing in a broader sense. ZUS also plans to use the international ISBSG knowledge base to analyze the effectiveness and timeliness of changes to the systems to better meet its needs. (continued below)
Refining the COSMIC method

The principles and rules of the COSMIC method of measuring a software size are highly stable because they are based on fundamental software engineering principles. Nevertheless, our documents that define and explain how to apply the method can always be improved and sometimes we find that definitions can be made clearer. The ‘Measurement Practices Committee’ (MPC) has the task of reviewing change requests and other suggestions for improvement, and to manage the development and final approval of new documents. The MPC’s newest ‘Guideline for sizing Real-Time Software’ published in June, is available for download from www.cosmicon.com/dl_manager.asp.

The MPC has several new publications that should appear in the next few weeks. We announce changes that will be incorporated in a future update to the Measurement Manual in ‘Method Update Bulletins’ (or MUB’s); these can also be downloaded from ‘cosmicon’. A new and important MUB 9 will propose a much-simplified definition of a ‘layer’ in a software architecture. The existing COSMIC definition is unnecessarily restrictive and does not align with some common uses of this term in the software world.

The simplification of ‘layer’ means that we must update the existing MUB 7 (published in 2010) which deals with the interactions of a functional process with persistent storage. There are more cases to consider and the explanation can be simplified further.

Owing to the COSMIC method’s flexibility, it is possible to measure many sizes of a piece of software. This means that it is vital to ensure consistency of size measurements across projects if their performance is to be compared fairly, and the results used in benchmarking studies and for future project estimating. To help ensure this consistency and to ‘keep it simple’, the MPC will publish a new Guideline that defines a series of standard ‘Measurement Patterns’. Each pattern defines a set of parameters (from the Measurement Strategy phase of the COSMIC process) for software from a given domain, Using these Patterns should ensure fair ‘apples versus apples’ size comparisons.

Another problem of ensuring consistent measurements across multiple activities arises with so-called ‘Non-Functional Requirements’, or NFR. Early in a software project many requirements such as for maintainability, usability, availability, etc may appear as NFR. By definition, NFR cannot be measured by a functional size measurement method, so they are difficult to take into account in project estimation. Efforts to measure a size of NFR face many intrinsic difficulties. However, by the time the project is finished, many of these NFR have evolved and are implemented, wholly or partly, in software functions that can be measured using the COSMIC method. A new MUB 10 will discuss NFR and how COSMIC measurements can account for them.

We must emphasize that these various improvements should have no effect on any existing measurements, nor will they affect the basic measurement principles and rules.

Considering these new and already-published MUB’s, the MPC’s next task will be to undertake a major update of the Measurement Manual to v 4.0. We hope this will be ready in early 2013.
Technical Advances 1: Automatic COSMIC size measurement

Renault, the French vehicle manufacturer, has published its rules for automatically measuring the COSMIC size of requirements for embedded software stored in Matlab Simulink. For this paper go to: http://www.cosmicon.com/dl_manager4.asp?id=303. This is a very significant breakthrough in functional size measurement (FSM).

Technical Advances 2: Estimating SAP Implementations

Estimating the effort for projects to implement major software packages such as SAP is notoriously difficult. A very interesting Masters thesis from Pierre Erasmus at Chalmers University, Gothenburg, Sweden describes a derivative of the COSMIC method to size the business processes of SAP and to estimate the implementation effort. The thesis (‘The COSMIC EPC method - An ERP functional size measurement method delivering time and cost estimates’) is available at <http://hdl.handle.net/2077/29163>. It appears that in principle, the EPC method could be applied for estimating any software package that implements a set of standard business processes.

Technical Advances 3: Estimating the size of embedded code


Abstract—To estimate software code size early in the development process is important for developing cost-efficient embedded systems. We have applied the COSMIC Functional Size Measurement (FSM) method for size estimation of embedded software components in the automotive industry (Saab and General Motors). Correlational studies were conducted using data from two automotive companies. The studies show strong correlation between functional size and software code size, which is important for obtaining accurate estimation results. This paper presents the characteristics and results of our work, and aims to provide a practical framework for how to use COSMIC FSM for size estimation purposes. We investigate the results from our earlier correlational studies, and conduct further studies to identify such a framework. Based on these activities, we conclude that a clear purpose of the estimation process, a well-defined domain allowing categorization of software, consistent content and quality of requirements, and historical data from implemented software are key factors for size estimation of embedded software components.

COSMIC User Group on Linkedin

As COSMIC is an open organization with no formal membership, a Forum where method users can post and receive news, and can ask questions or start discussions is vital, Unfortunately the Forum on ‘cosmicon’ had to be abandoned after it was hit by spam. We then set up a group on Linkedin which had reached over 300 members when it was deleted without warning. We sincerely apologize for the inconvenience this caused. We have re-established a ‘COSMIC User’ group on Linkedin. To join, go to http://www.linkedin.com/groups/COSMIC-Users-Group-4428621/about
Conferences 1: COSMIC presented at IEEE/CSI workshop in India

On 2nd June 2012, a professional development workshop on software engineering was organized by IEEE Computer Society and the Computer Society of India in association with the SSN School of Advanced Software Engineering and supported by Amitysoft Technologies.

The COSMIC method was introduced at the workshop as the only second-generation FSM method designed on solid engineering principles, field-tested in different domains, and recognized as an ISO standard, that is being widely adopted across the world.

There was good interest from practitioners from the aerospace, atomic power, banking, telecom, and health industries. Participants from atomic power and aerospace showed the greatest interest given the hybrid nature of the systems in their environments.

Conferences 2: IWSM 2012 in Assisi, Italy, 18th/19th October

The 2012 IWSM/Mensura conference has a very full and varied program with many papers on estimating for various types of projects, use of metrics for process improvement, integrating SOA and legacy software, evaluating non-functional requirements, monitoring agile projects, evaluating a DotNet application, software supplier selection, etc., etc.

There are many papers concerning use of the COSMIC method including on:
- IFPUG to COSMIC conversion
- Dispersion of COSMIC measurements
- Refinement of the COSMIC measurement procedure for real-time embedded software
- FSM of electronic control unit software designed using the AUTOSAR Standard
- Approaches for COSMIC approximate sizing
- Run-time measurement of COSMIC functional size for Java business applications
- A COSMIC web advice module case study.

For the full conference program, registration, etc, go to www.iwsm2012.wordpress.com

Further Information

COSMIC, the Common Software Measurement International Consortium, is a not-for-profit organization, run entirely by volunteers, dedicated to the improvement of software measurement and its uses in project estimating, process improvement, benchmarking, etc. All our standards, guidelines, support tools, research publications, etc are available for free download from the portal at www.cosmicon.com. At this site you will find much useful information about software functional size measurement and its uses, the COSMIC organization and methods, available resources, method certification, benchmark data, etc.

Current COSMIC Officers can be contacted via the ‘cosmicon’ site. They are:
- Chair: Alain Abran, École de Technologie Supérieure, Montréal, Canada
- President: Luca Santillo, Agile Metrics, Italy

If you have any questions or require further information on the COSMIC method, please contact your national representative on the COSMIC International Advisory Council, via http://www.cosmicon.com/iacV3.asp, or contact the ‘COSMIC Users Group’ on Linkedin at http://www.linkedin.com/groups/COSMIC-Users-Group-4428621/about

If you would like to publish an article in this newsletter relating your experience with COSMIC, please forward a draft to the editor via cr.symons@btinternet.com