

Abstract of paper presented at the International Workshop on Software Metrics, Rotterdam,
October 2014

Measuring COSMIC Software Size from Functional Execution Traces of Java Business Applications

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Abstract

Functional Size Measurement (FSM) methods aim to measure the size of software by quantifying its functional user requirements. Although FSM is greatly beneficial in software project management, due to involving judgment on the part of the measurer, differences for the same application may occur. In addition, when an organization wants to build its own historical repository, FSM of the previously developed software might be costly. In this paper, therefore, we examine the possibility of measuring the functional size from source or binary code automatically. Our method utilizes UML Sequence Diagrams derived from functional execution traces of the software at runtime, by which we apply COSMIC FSM rules to measure size. We have aimed to develop a tool called ‘Cosmic Solver’ to support our method and used its initial prototype for functional size measurement of a sample, three-tier Java business application. This paper explains the basics of the method and the prototype, and the results from its application on the sample. It has been found that the size extracted by the prototype convergent to the one obtained by manual calculation.

Keywords—Functional size; function point; UML; sequence diagram; AOP; AspectJ; COSMIC; FSM; CFP; automation; size measurement; Java; dynamic analysis.

The full paper should be available from IEEE Explore www.ieeexplore.ieee.org/Xplore

The slides from the presentation at the IWSM are available at www.slideshare.net/cosmic-fsm