

Workshop Description of 4th Workshop on Software Quality (WOSQ)

Sunita Chulani
IBM Research,
Center for Software
Engineering,
650 Harry Road,
San Jose, CA 95120
United States
+1-408-927-1767
sunita@us.ibm.com

Barry Boehm
University of Southern
California
Center for Software
Engineering,
United States
boehm@sunset.usc.edu

June Verner
National ICT Australia
Australian Technology Park
Australia
june.verner@nicta.com.au

Bernard Wong
University of Technology,
Sydney
PO Box 123
Broadway NSW 2007
bernard@it.uts.edu.au

ABSTRACT

Cost, schedule and quality are highly correlated factors in software development. They basically form three sides of the same triangle. Beyond a certain point (the “Quality is Free” point), it is difficult to increase the quality without increasing either cost or schedule or both for the software under development. As products and applications mature, users expect higher quality products. They want IT organizations to be responsible and accountable for the quality claims made by the product marketing teams. In the last couple decades, much software engineering research has focussed on standards, methodologies and techniques for improving software quality, measuring software quality and software quality assurance. Most of this research is focused on the internal/development view of quality. More recent studies done in conjunction with the marketing groups have made attempts to understand the customer view of quality. All of these different ongoing activities to understand quality from the various perspectives have made the field even more enriching and exciting. The Fourth Workshop on Software Quality aims to bring together academic, industrial and commercial communities interested in software quality topics to discuss the different technologies being defined and used in the software quality area.

Categories and Subject Descriptors

D.2.9 [Software Engineering]: Management – *Software Quality Assurance*

1. INTRODUCTION

During the lifecycle of a software product, different stakeholders view the quality of the software differently. For example, the development team may focus on reducing the defects in the code to minimize MTTF (Mean Time to Failure) of the product whereas the customers care about the total user experience and view quality as not only the defect-free operation of the product but also want ease of use and ease of installation. Hence, depending on whom you talk to, you will most likely get a different answer on what they mean by quality. Though people have been discussing software quality for decades, software quality research is still relatively immature, and it is difficult for a

user to compare software quality across products. Practitioners and researchers are still not clear as to what a good measure of software quality is because of the variety of interpretations of the meaning of quality, of the meanings of terms to describe its aspects, of criteria for including or excluding aspects in a model of software, and of the degree to which software development procedures should be included in the definition. Recent studies have addressed the notion that stakeholders’ differ in their views of quality [1], [2], [3], [4], [5], [6], [7].

Software users today are demanding higher quality than ever before and many of them are willing to pay a higher price for better quality software products. Mature IT organizations are setting up IT Governance frameworks to provide for accountability for the quality of the products they purchase and deploy. The Software Evaluation Framework, for example, considers the influence of both the development methodology and the background of the stakeholder in its attempt to evaluate software quality [3], [4], [5], [6]. The Stakeholder/Value Dependency Framework supports the view that there are many definitions of quality and many stakeholder priorities, which influence any software quality evaluation [7], [8]. In [1] and [2], quality is presented from the customer’s perspective and studies have shown that companies can generate higher revenue through increased customer satisfaction and improved product quality.

In a recent article titled ‘The Failure of Quality’, Kitchenham challenges the software industry in their approach to quality. She states that quality systems and procedures have become a means of avoiding blame rather than a means of delivering an excellent product or service [9]. She concludes that we need procedures that support efforts for producing quality software products rather than mindless bureaucracy that influences trust and goodwill between stakeholders.

Today, organizations in search of competitive advantages, have invested heavily in automating their business processes. Greater reliance is placed on software products, to the point where software has a critical and strategic role in organizations’ business. With this level of importance and the reliance placed on software products, it has become important to set up IT Governance frameworks for accountability. We also need to improve the efficiency and productivity of the development and maintenance processes. As such, researchers and practitioners have been paying increasing attention to understanding quality and improving the quality of the software being developed. Some studies have focused on techniques and approaches to assure the

quality of software products, whilst others have focused on the software development process, how to define it, evaluate it and improve it. Many of these areas will be addressed during this workshop.

2. WORKSHOP GOALS

This workshop, which is co-located with ICSE 2006, the International Conference on Software Engineering, the premier software engineering conference, brings together academic, industrial and commercial communities interested in software quality in order to discuss the different technologies that have been defined and used in the software quality area.

The first goal of the workshop is to explore whether some consensus definition of “software quality” is achievable and can serve as a basis for reasoning about, measuring, and achieving software quality in sound, consistent, and useful ways. Papers are solicited for candidate approaches to achieving such a consensus definition.

The second goal of the workshop is to discuss how well, and under what conditions, current and emerging software quality-related standards, methodologies, and techniques enable us to improve the quality of our software projects. Here, papers are solicited on such topics as the software quality-related aspects of:

- Software Product Evaluation and Certification
- Software Process Definition, Evaluation and Improvement
- Software Quality Education
- Introduction of Software Quality Programs
- Methods and Tools for Quality Assurance
- Quality Metrics – in-process quality and customer views of quality
- Software Quality for Web-based and Object-Oriented development
- Total Quality Management
- Building quality into software products
- Project management and software quality
- Testing, Inspections, Walkthroughs and Reviews
- Combining Quality and Rapid Development.

3. WORKSHOP FORMAT

The workshop is designed to cover one day of presentations and discussions. Interested participants were invited to submit papers describing problems and experiences describing their current research into software quality.

The structure of the Workshop includes four sessions plus a coda, as follows:

1. Defining “Software Quality”
2. Achieving Software Quality I
3. Achieving Software Quality II
4. Achieving Software Quality III

5. Defining “Software Quality” Revisited

Discussion points will be recorded for each topic and will consider:

- a set of current research efforts;
- a set of topics requiring further investigation;
- a list of research groups who have agreed to collaborate in their research area; and,
- a set of possible future trends.

Finally, the results of the discussions will be presented in the closing plenary session.

4. STEERING COMMITTEE

Dr. Barry Boehm, University of Southern California Center for Software Engineering, United States

Dr. Sunita Chulani, IBM T.J. Watson Research Center, United States

Dr. June Verner, National Information Communication and Technology Australia (NICTA), Australia

Dr. Bernard Wong, University of Technology Sydney, Australia

5. REFERENCES

- [1] Chulani, S., Santhanam P., Moore D., Leszkowicz B., Davidson G., “Deriving a Software Quality View from Customer Satisfaction and Service Data”, *European Software Conference on Metrics and Measurement*, Mar 2001.
- [2] Chulani, S, Ray, B., Santhanam, P. & Leszkowicz, R.: “Metrics for Managing Customer View of Quality”, *IEEE Metrics conference*, Sep. 2003
- [3] Wong, B. (2004), The Software Evaluation Framework ‘SEF’ Extended, *Information and Software Technology Journal*, Dec 2004 Vol 46/15 pp 1037-1047.
- [4] Wong, B. (2003), Applying the Software Evaluation Framework ‘SEF’ to the Software Development Life Cycle, *Proceedings of the 2003 International Symposium on Empirical Software Engineering (ISESE 2003)*, 2003.
- [5] Wong, B. (2003), A Study of the Metrics applied to the Software Evaluation Framework ‘SEF’, *Proceedings of the Third International Conference on Quality Software (QSIC 2003)*, 2003
- [6] Wong, B. & Jeffery, R.: Cognitive Structures of Software Evaluation: A Means-End Chain Analysis of Quality, *Proceedings of the Third International Conference, PROFES 2001*, 2001, pp 6-26.
- [7] Boehm, B., Huang, L., Jain, A., Madachy, R. (2004), Quality as Stakeholder Value, *Proceedings of the Second Workshop on Software Quality, ICSE 2004*, 2004, pp 1-3.
- [8] Boehm, B., Value-Based Software Engineering, *ACM Software Engineering Notes*, Vol 28, No 2, March 2003, pp29.
- [9] Kitchenham, B., The Failure of Quality, *Proceedings of the Second Workshop on Software Quality, ICSE 2004*, 2004, pp 4-5.