

Demonstration Guide - USC-CSSE Convocation 2006

Name: Value-Based Software Quality Model (VBSQM)

Presenter: LiGuo Huang

Objective: VBSQM estimates the ROI for achieving the desired value for software quality attributes and determines how much software quality investment is enough for various project value/risk profiles. It helps select the most cost-effective software quality assurance strategies.

Rationale: Software quality was traditionally viewed in terms of dimensions of software system behavior, threats, and mechanisms. However, investments in software quality must be balanced with other technical demands and non-technical (e.g. economical) constraints. That is, software quality in a given system must be evaluated in terms of *value/ROI* that it provides for stakeholders and combined risk exposure of various quality attributes. Hence, VBSQM is developed as a value-based model for optimizing software quality attribute investments and balancing the tradeoffs among software quality attributes.

Target Users: Project decision-makers looking to identify appropriate software quality investment level(s) and quality improvement strategies for a software project.

Scope: Cost, Value, ROI and risk estimates for systems with software quality requirements

Project Type: Multi-year USC-CSE research project

Developers:

- *Model Principles:* Dr. Barry Boehm and LiGuo Huang

- *Tool Developer:* LiGuo Huang

Execution Platform: Windows 95/98/NT/2000/XP & Microsoft Excel (Enabled Macros)

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Technical Approach: VBSQM integrates cost estimating relationships (CER's) from the Constructive Cost Model COCOMO II; quality estimating relationships (QER's) from the Constructive Quality Model COQUALMO; and value estimating relationships (VER's) supplied by the system's stakeholders. And it estimates the ROI for achieving the desired values for software quality attributes starting from the baseline software quality investment level. Furthermore, it helps determine how much software quality investment is enough based on combined risk exposure of multiple software quality attributes.

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