Use of Software Triggers to Evaluate Software Process Effectiveness and Capture Customer Usage Profiles

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Abstract

We have analyzed fault data comprising nearly 30,000 records (including in-process and field data) from two real products A and B over multiple releases, using Orthogonal Defect Classification (ODC). We exploit the information capture by ODC triggers to evaluate the development activities, and identify specific actions for improvement in development. We illustrate the use of triggers to capture customer usage in a way directly meaningful to product development and show:

- the complete trigger profiles by development activity for two releases of product A, and evaluate the effectiveness of product development activities
- how systematically the appropriate trigger distribution during the development activities can be made to approach the trigger distribution in the field over six releases, as validated by $\chi^2$ tests
- study the field defect trigger distributions for product A over three releases, and demonstrate the consistency of the profile over multiple releases and discuss the origin of differences
- compare the field trigger profiles of products A and B and discuss the differences in their customer usage and environment.
This is the most comprehensive use of ODC triggers in development and field reported to date.

Keywords: ODC Triggers, usage profiles, test effectiveness