Defect Classification and Defect Types Revisited

Stefan Wagner
Technische Universität München, Germany
The Real Defect-Detection Process
The Ideal Defect-Detection Process

Defect-Detection → Defect → Quality Engineer

Defect Database → Severity → Effort → Trigger → Type → Mode

QA Optimisation → Empirical Analysis → Defect Distributions → Quality Model
State of the Art

• Defect Taxonomies
  – Implementation solution
  – Beizer

• Root Cause Analysis
  – Analysis of developer mistakes
  – Fault prevention
  – IBM

• Defect Classification
  – Classification along several dimensions
  – IEEE Std 1044-1993
  – IBM’s ODC
  – HP’s Defect Origins, Types, and Modes
Challenges

• Different Artefacts
  – Similar classifications?
  – Propagation?

• Dimensions
  – Basic set?
  – What can be reasonably expected to be documented?

• Defect Type Distributions
  – General distributions?
  – What factors do they depend on?
  – Domain-specific distributions?

• Connection to Quality Models
  – What quality attributes are affected?
  – Classifications as part of a quality model or vice versa?

• How can we justify the effort for the quality engineer?
Conclusions

• Useful quality assurance optimisation only possible using defect classifications intensively
• We need to
  – find the important dimensions
  – for different artefacts
  – provide empirical data
  – relate classifications to quality models
  – better integrate the classification in the QA process
  – Convince practitioners of the value of defect classification