A Decade of Software Quality Analysis in Practice
Surprises, Anecdotes, and Lessons Learned (Keynote)

Elmar Juergens
CQSE GmbH
Garching near Munich, Germany
juergens@cqse.eu

Abstract— I implemented and ran my first clone detection on industrial software roughly a decade ago. Fueled by both the amounts of problematic code it uncovered, and the (at least partially) positive feedback from developers, our research group subsequently focused on quality analyses to improve engineering practice.

Since then, our research prototypes have grown into a commercial tool employed by professional software developers around the world every day. It implements both static and dynamic analyses for over 25 programming languages and runs in development, test and production environments of hundreds of companies. We bootstrapped our spin-off, CQSE GmbH, into a company of 30 employees (half of which hold a PhD in Software Engineering). All of us exclusively work on, or employ as part of our audit services, software quality analyses built upon this community’s research.

In this keynote, I want to share our key insights: experiences, surprises and anecdotes. I will cover hard lessons learned on how to have an impact in real-world projects, surprising results of seemingly trivial approaches, the role of software visualizations in marketing and our key learnings in transferring research from academia to practice.

Index Terms—Clone Detection, Test Gap Analysis, Usage Analysis, Software Audits.

I. Bio

Elmar Juergens works both as a researcher and a founder. Elmar wrote his PhD thesis on clone detection and is still active as a researcher in the area of software quality analysis. In 2009, he co-founded CQSE GmbH. Apart from his role in managing a growing company, he focuses on enabling teams to use analysis tools effectively, adapting quality assurance processes and on implementing and facilitating organizational change. Elmar sometimes talks at research conferences (e.g. ICSE, ICPC) and frequently at industry events (50+ talks since 2012). Elmar was named Junior Fellow of the GI (Gesellschaft für Informatik) in 2015.