

Title

**CERN Opens a New Dimension of Software Quality:
Static Analysis Meets 50 MLOC**

Speaker(s)

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To whom is the presentation addressed?

Decision makers and developers caring about the reality of software quality

Keywords

Quality Assurance, Static Analysis, CERN

Abstract

The software of CERN's experiments faces major challenges: it needs to find the extremely rare (one in a billion and less), it has a lifetime of 40 years, it is maintained by 1000 part-time developers that mostly don't have an education in computing, and it is not seen as a product but as a tool. And it consists of about 50 million lines of C++ code.

These challenges require a strict control of software quality. I will present the QA approach of the ROOT data analysis project, one of the core projects at CERN used e.g. by all experiments at the Large Hadron Collider (LHC), and the QA approach of the LHC experiments themselves. Even with a large and seemingly complete set of QA tools, a whole dimension of bugs was hiding in CERN's code, putting the quality of the scientific results at risk. I will show how static analysis helped against that, and which requirements static analysis must fulfill to be accepted by developers.

Biography

Axel is a physicist by education, with stays in Germany (University of Muenster), The Netherlands (University of Nijmegen / NIKHEF), and the USA (Fermi National Accelerator Laboratory near Chicago). He is a scientist at CERN (Geneva, Switzerland) since 2005 and a member of the ROOT (<http://root.cern.ch>) development team.
