



How To Review 4 Million Lines of ATLAS Code — Highlights

- Computing landscape is changing, with concurrency becoming more and more important
 - Software now has to change, which is difficult after 15 years of ‘serial’ thinking and coding
 - ATLAS already understood the requirements on the framework code (2014)
- ATLAS undertook a wide *design* review of its *algorithmic* code in 2016
 - We looked at core algorithm and data flow design, with an emphasis on thread safety
 - The review process has produced an up to date body of documentation on the current state of the code
 - With follow up items in Jira epic tickets
- There has been substantial *exchange of ideas* about good design patterns and *discussion* about how to mitigate and overcome poor ones
 - Which has helped start a process of *re-design and re-engineering for a concurrent future*
- The process involved a *considerable investment* from a hard pressed development community, but this was recognised as being *worthwhile*
- ATLAS can now approach the transition to a multi-threaded framework for LHC Run 3 with a much better understanding of the work required and the key difficulties to be overcome

Graeme Stewart
Walter Lampl
for the ATLAS Collaboration