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