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A new Scheme for ATLAS Trigger Simulation using Legacy Code

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An accurate simulation of the trigger response is necessary for high quality data analyses. This poses a challenge. For event generation and simulated data reconstruction the latest software is used to be in best agreement with the reconstructed data. Contrary the trigger response simulation needs to be in agreement with when the data was taken. The approach we follow is to use trigger software and conditions data that matches the simulated data-taking period - potentially dating many years back. Having a strategy for running old software in a modern environment thus becomes essential when data simulated for past years start to present a sizable fraction of the total.
We examined the requirements and possibilities for such a simulation scheme within and beyond the existing ATLAS software framework and successfully implemented a proof-of-concept simulation chain. One of the greatest challenges has been that of bridging old and new file formats, as most of the file formats and data representations used by ATLAS are changing with time. Over the time periods envisaged data format incompatibilities are likely to emerge in databases and other external storage services as well. Software availability is an issue. The support for the underlying operating system might stop. In this
talk we will present the encountered problems and developed solutions, and will discuss proposals for future development. These ideas will have reach beyond the retrospective trigger simulation scheme at ATLAS as they are applicable in other areas of data preservation.

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