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The LHCb Software and Computing Upgrade towards LHC Run 3

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LHCb is planning major changes for its data processing and analysis workflows for LHC Run 3. Removing the hardware trigger, a software only trigger at 30 MHz will reconstruct events using final alignment and calibration information provided during the triggering phase. These changes pose a major strain on the online software framework which needs to improve significantly. The foreseen changes in the area of the core framework include a re-design of the event scheduling, introduction of concurrent processing, optimisations in processor cache accesses and code vectorisation. Furthermore changes in the areas of event model, conditions data and detector description are foreseen. The changes in the data processing workflow will allow an unprecedented amount of signal events to be selected and therefore increase the load on the experiment's simulation needs. Several areas of improvement for fast simulation are currently being investigated together with improvements needed in the area of distributed computing. Finally the amount of data stored needs to be reflected in the analysis computing model where individual user analysis on distributed computing resources will become inefficient. This contribution will give an overview of the status of those activities and future plans in the different areas from the perspective of the LHCb computing project.

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