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H1 Monte Carlo Production on the Grid (H1 Collaboration)

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The H1 Collaboration at HERA is now in the era of high precision analyses based on the final and complete data sample. A natural consequence of this is the huge increase in requirement for simulated Monte Carlo (MC) events. As a response to this increase, a framework for large scale MC production using the LCG Grid Infrastructure was developed. After 3 years, the H1 MC Computing Framework has become a high performance, reliable and robust platform operating on the top of gLite infrastructure. The original framework has been expanded into a tool which can handle 600 million simulated MC events per month and 20,000 simultaneously supported jobs on the LHC Grid, decreasing operator effort to the minimum. An annual MC event production rate of over 2.5 billion events has been achieved, and the project is integral to the data analysis performed by H1. Tools have also been developed to allow modifications of H1 detector details, for different levels of MC production steps and for full monitoring of the jobs on the Grid sites. The H1 MC Framework will be described, based on the experience gained during the successful MC simulation for the H1 Experiment, focussing on the solutions which can be implemented for other types of experiments - not only those devoted to HEP. Failure states, deficiencies, bottlenecks and scaling boundaries observed during this full scale physics analysis endeavour are also addressed.

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