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The LHCb Silicon Tracker - Control system specific tools and challenges

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The experiment control system of the LHCb experiment is continuously evolving and improving. The guidelines and structure initially defined are kept, and more common tools are made available to all sub-detectors. Although the main system control is mostly integrated and actions are executed in common for the whole LHCb experiment, there is some degree of freedom for each sub-system to implement the control system using these tools or by creating new ones.

The implementation of the LHCb Silicon Tracker control system was extremely disorganized and with little documentation. This was due to either lack of time and manpower, and/or to limited experience and specifications. Despite this, the Silicon Tracker control system has behaved well during the first LHC run. It has continuously evolved since the start of operation and been adapted to the needs of operators with very different degrees of expertise. However, improvements and corrections have been made on a best effort basis due to time constraints placed by the need to have a fully operating detector. The system will be transformed by an ambitious rework of the code which will take place in the first months of the LS1. Performance issues with the regard to configuration and monitoring will be addressed, and the maintainability and use of the system will be improved.

This work describes the main tools which have been created specifically for the Silicon Tracker operation including the safety tree and the automated safety actions which are implemented to prevent damage to the detector electronics. In addition, the automation of recurrent tasks related mostly to data mining, error detection and recovery will be discussed. It describes also the new features and improvements that will be introduced after the code rework during the LS1, and a summary of the main tasks needed to accomplish this.

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