

# DIRAC in Large Particle Physics Experiments

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The DIRAC project is developing interware to build and operate distributed computing systems. It provides a development framework and a rich set of services for both Workload and Data Management tasks of large scientific communities. A number of High Energy Physics and Astrophysics collaborations have adopted DIRAC as the base for their computing models. DIRAC was initially developed for the LHCb experiment at LHC, CERN. Later, the Belle II, BES III and CTA experiments as well as the linear collider detector collaborations started using DIRAC for their computing systems.

Some of the experiments built their DIRAC-based systems from scratch, others migrated from previous solutions, ad hoc or based on different middlewares. Adaptation of DIRAC for a particular experiment was enabled through the creation of extensions to meet their specific requirements. Each experiment has a heterogeneous set of computing and storage resources at their disposal that were aggregated through DIRAC into a coherent pool. Users from different experiments can interact with the system in different ways depending on their specific tasks, expertise level and previous experience using command line tools, python APIs or Web Portals. In this contribution we will summarize the experience of using DIRAC in particle physics collaborations. The problems of migration to DIRAC from previous systems and their solutions will be presented. Overview of specific DIRAC extensions will be given. We hope that this review will be useful for the experiments considering an update or a new from-scratch design of their production computing models.

## Tertiary Keyword (Optional)

## Secondary Keyword (Optional)

Distributed workload management

## Primary Keyword (Mandatory)

Computing middleware

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