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DIRAC evaluation for the SuperB experiment

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The SuperB asymmetric energy e+e- collider and detector to be built at the newly founded Nicola Cabibbo Lab will provide a uniquely sensitive probe of New Physics in the flavor sector of the Standard Model. Studying minute effects in the heavy quark and heavy lepton sectors requires a data sample of 75 ab⁻¹ and a luminosity target of 10³⁶ cm⁻² s⁻¹.

In this work we will present our evaluation of the DIRAC Distributed Infrastructure for use in the SuperB experiment based on the two use cases:

End User Analysis and Monte Carlo Production. We will present:

- 1) The test bed layout with DIRAC site and service configurations and the efforts to enable and manage OSG-EGI interoperability.
- 2) Our specific use cases ported to the DIRAC test bed with the computational and data management requirements and the DIRAC subsystem configuration.
- 3) The test results obtained from running both SuperB Monte Carlo and end user analysis with details about the performance achieved, the efficiency and the failures that occurred during the tests.
- 4) An evaluation and comparison of the two catalogue systems provided by the DIRAC framework, LFC (LHC File Catalogue) and DIRAC File Catalog in terms of features, performance and reliability.
- 5) Evaluation of capabilities and performance tests of the DIRAC Cloud capabilities as potentially applicable to SuperB computing.
- 6) A comparison of DIRAC with other submission systems available in the HEP community with pros and cons of each system.

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