Toward a Grid Technology Independent Programming Interface for HEP Applications

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In the High Energy Physics (HEP) community, Grid technologies have been accepted as solutions to the distributed computing problem. Several Grid projects have provided software in the last years. Among of all them, the LCG - especially aimed at HEP applications - provides a set of services and respective client interfaces, both in the form of command line tools as well as programming language APIs in C, C++, Java, etc.

Unfortunately, the programming interface presented to the end user (the physicist) is often not uniform or provides different levels of abstractions. In addition, Grid technologies face a constant change and an improvement process and it is of major importance to shield changes of underlying technology to the end users. As services evolve and new ones are introduced, the way users interact with them also changes.
These new interfaces are often designed to work at a different level and with a different focus than the original ones. This makes it hard for the end user to build Grid applications.

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We have analyzed the existing LCG programming environment and
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identified several ways to provide high-level technology independent interfaces. In this article, we describe the use cases we were presented by the LCG experiments and the specific problems we encountered in documenting existing APIs and providing usage examples. As a main contribution, we also propose a prototype high-level interface for the information, authentication and authorization systems that is now under test on the LCG EIS testbed by the LHC experiments.

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