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Flexible job submission using Web Services: the gLite WMProxy experience

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Contemporary Grids are characterized by a middleware that provides the necessary virtualization of computation and data resources for the shared working environment of the Grid. In a large-scale view, different middleware technologies and implementations have to coexist. The SOA approach provides the needed architectural backbone for interoperable environments, where different providers can offer their solutions without restricting users to just one specific implementation. The WMProxy (Workload Manager Proxy) is a new service providing access to the gLite Workload Management System (WMS) functionality through a simple Web Services based interface. The WMProxy was designed to efficiently handle a large number of requests for job submission and control to the WMS and the service interface addresses the Web Services and SOA architecture standards, in particular adhering to the WS-Interoperability basic profile. In this paper we describe the WMProxy service: from its architecture, independent from the used Web Services container, up to the provided functionality, all together with the rationale behind the decisions made during both the design and implementation phases. In particular, we provide a description of how the WMProxy is integrated with the gLite Workload Management System; the used technologies, focusing on the Web Services features; the mechanisms adopted to improve performances still keeping high reliability and fault-tolerance; the changes in the job submission operation chain with respect to the previous generation of Workload Management System and the new operations provided in order to support bulk-submission and improve Client-Server interaction capabilities.

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