

GANGA - A GRID User Interface

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Ganga is a lightweight, end-user tool for job submission and monitoring and provides an open framework for multiple applications and submission backends. It is developed in a joint effort in LHCb and ATLAS. The main goal of Ganga is to effectively enable large-scale distributed data analysis for physicists working in the LHC experiments. Ganga offers simple, pleasant and consistent user experience in a variety of heterogeneous environments: from local clusters to global GRID systems. Ganga helps end-users organize the analysis activities on the GRID by providing automatic persistency of the job's metadata. A user has full access to the jobs submitted in the past including their configuration and input/output. Automatic status monitoring and output retrieval simplify the usage of the tool. Job splitting allows a very efficient handling of large numbers of similar jobs using different datasets. Job templates provide a convenient mechanism to support repetitive tasks. Ganga is an open development framework and has a clear internal architecture. Ganga Public Interface (GPI) is a python-based, user-centric API that is a key component of the system. GPI combines the consistency and flexibility of the programming interface with intuitive and concise usage. GPI may be used for writing complex, user-specific scripts or in the interactive python shell. A Qt-based graphical user interface is a GPI overlay which integrates scripting and graphical capabilities into a single environment. GPI may also be embedded as a library in a third-party framework and be used as convenient abstraction layer for job submission and monitoring. Release 4 of Ganga contains optimized handlers for ATLAS/Athena and LHCb/Gaudi applications which are interfaced to a number of generic execution backends (LSF, LCG, gLite) as well as experiment-specific workload management systems (LHCb's DIRAC and ATLAS production system). Other applications, such as Geant4 simulation in medical physics, or BLAST protein alignment algorithm in biotechnology have been successfully run with Ganga. Ganga fully exploits the plug-in architecture that makes the integration of new applications and backend very easy.

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