

# QCDgrid: A Grid resource for Quantum Chromodynamics

In conjunction with the UKQCD collaboration, EPCC are developing a data management system 'QCDgrid' that combines the distributed resources of the collaborators into a robust, unified facility called the UKQCD Grid.

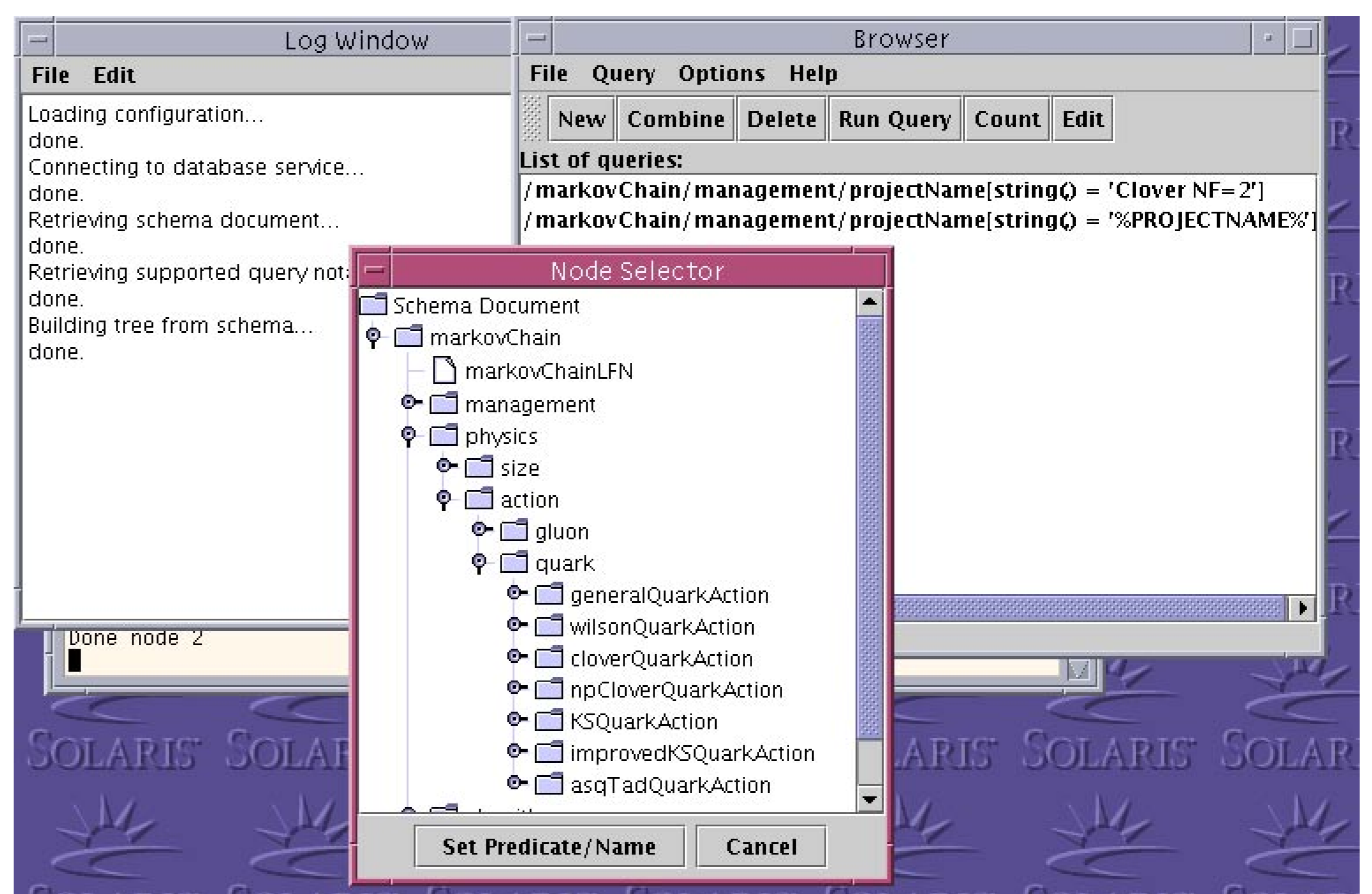
QCDgrid builds on the Globus Toolkit technology to provide a simple and intuitive environment that hides the complexities of the underlying Grid and presents a standard file system to the user. QCDgrid incorporates a robustness metric that automatically disperses datasets across the grid, providing a resilience that ensures data is not affected by the loss of one (or possibly more) storage nodes.

QCDgrid allows the user to query an associated Metadata Catalogue using a GUI browser, locating and automatically retrieve datasets based on a query definition. The software provides a Job Submission System that allows a user to schedule computations on remote HPC systems, from the comfort of their PC. As an example, a UKQCD user may submit a post-processing job to a remote compute resource and deliver the associated simulation data directly to the resource from the data grid, obviating any need to transfer data manually via their local system.

In the future, EPCC will be responsible for the definition of a web service interface specification that will allow a subset of QCDgrid functionality to be exposed to physicists in the International Lattice Data Grid (ILDG) community.

## Technology highlights

- File-system representation of Data Grid, promotes ease of use
- Metadata Catalogue, attributes physical meaning to datasets



- Query tool for Metadata Catalogue, facilitates location and retrieval of data.
- Job Submission System, supports direct data transfer from the grid to remote HPC facilities.
- Globus/EDG-based distributed data management infrastructure.

## Acknowledgments

QCDgrid is part of the GridPP/GridPP2 project, a PPARC funded collaboration between particle physicists and computational scientists from the UK and CERN, who are building a Grid for particle physics.