

DOSAR: A Distributed Organization for Scientific and Academic Research

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Hadron Collider experiments in progress at Fermilab's Tevatron and under construction at the Large Hadron Collider (LHC) at CERN will record many petabytes of data in pursuing the goals of understanding nature and searching for the origin of mass. Computing resources required to analyze these data far exceed the capabilities of any one institution. The computing grid has long been recognized as a solution to this and other problems. The success of the grid solution will crucially depend on having high-speed network connections, the ability to use general-purpose computer facilities, and the existence of robust software tools. A consortium of universities in the US, Brazil, Mexico and India are developing a fully realized grid that will test this technology. These institutions are members of the DØ experiment at the Tevatron and the ATLAS or CMS experiments at the LHC, and form the Distributed Organization for Scientific and Academic Research (DOSAR). DOSAR is a federated grid organization encompassing numerous institutional grids. While founded for HEP research DOSAR forms the nucleus of grid infrastructure organization on the constituent campuses. DOSAR's strategy is to promote multi-disciplinary use of grids on campus and among the institutions involved in the consortium. DOSAR enables researchers and educators at the federated institutions to access grid resources outside the HEP context and is a catalyst in establishing state-wide grid structures. DOSAR is an operational grid which is a Virtual Organization (VO) in the Open Science Grid (OSG). In this talk, we will describe the architecture of the DOSAR VO, the use and functionality of the grid, and the experience of operating the grid for simulation, reprocessing and analysis of data from the DØ experiment. A software system for large-scale grid processing will be described. Our experience with high-speed intercontinental network connections will also be discussed.

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