GRID Application Meta-Repository: Repository Interconnectivity and Cross-domain Application Usage in Distributed Computing Environments

1 Alexandru TUDOSE, 1 Gabor TERSTYANSKY, 1 Stephen WINTER & 2 Peter KACSUK

1 University of Westminster, London, UK
2 MTA SZTAKI, Budapest, HU

GRID Application Repositories vary greatly in terms of access interface, security system, implementation technology, communication protocols and repository model. This diversity proves to be a significant limitation in terms of interoperability and inter-repository access and a great limitation for users, which are bound to one specific repository.

This paper presents the GRID Application Meta-Repository System (GAMRS) as a solution that offers better options for the management of GRID applications and that could become the next state-of-the-art in the field.

GAMRS proposes a generic repository architecture which allows any GRID Application Repository (past, present and future) to be connected to the system independent of their underlying technology. It also presents applications in a uniform manner and makes applications from all connected repositories visible to Web search engines. The solution provides a standard OGSi GRID Service interface that allows seamless integration with any other OGSi GRID Service. GAMRS access interfaces allow dynamical discovery of repository objects and associated metadata, at the same time making these objects exchangeable between OAI (Open Archive Initiative)-compliant repositories.

GAMRS can also function as a repository in its own right and as such stores applications under a new repository model. The model allows for interoperability between various GRID repositories and services and extends the functionality of GAMRS beyond GRID. The new model helps describe and store applications and application-related objects, which would later be available to use across different GRID services. With the help of this model, applications can also be presented as embedded in virtual machines (VM) and therefore they can be run in their native environments and can easily be deployed on virtualized infrastructures allowing interoperability
with new generation technologies (e.g. cloud computing, virtualization, automatic service/application deployments, automatic VM generation).

A pilot GAMRS solution has been implemented and the test results are included in this paper.